

MOTOR AGE

Ten Days Among the Eastern Hills

By David Beecroft

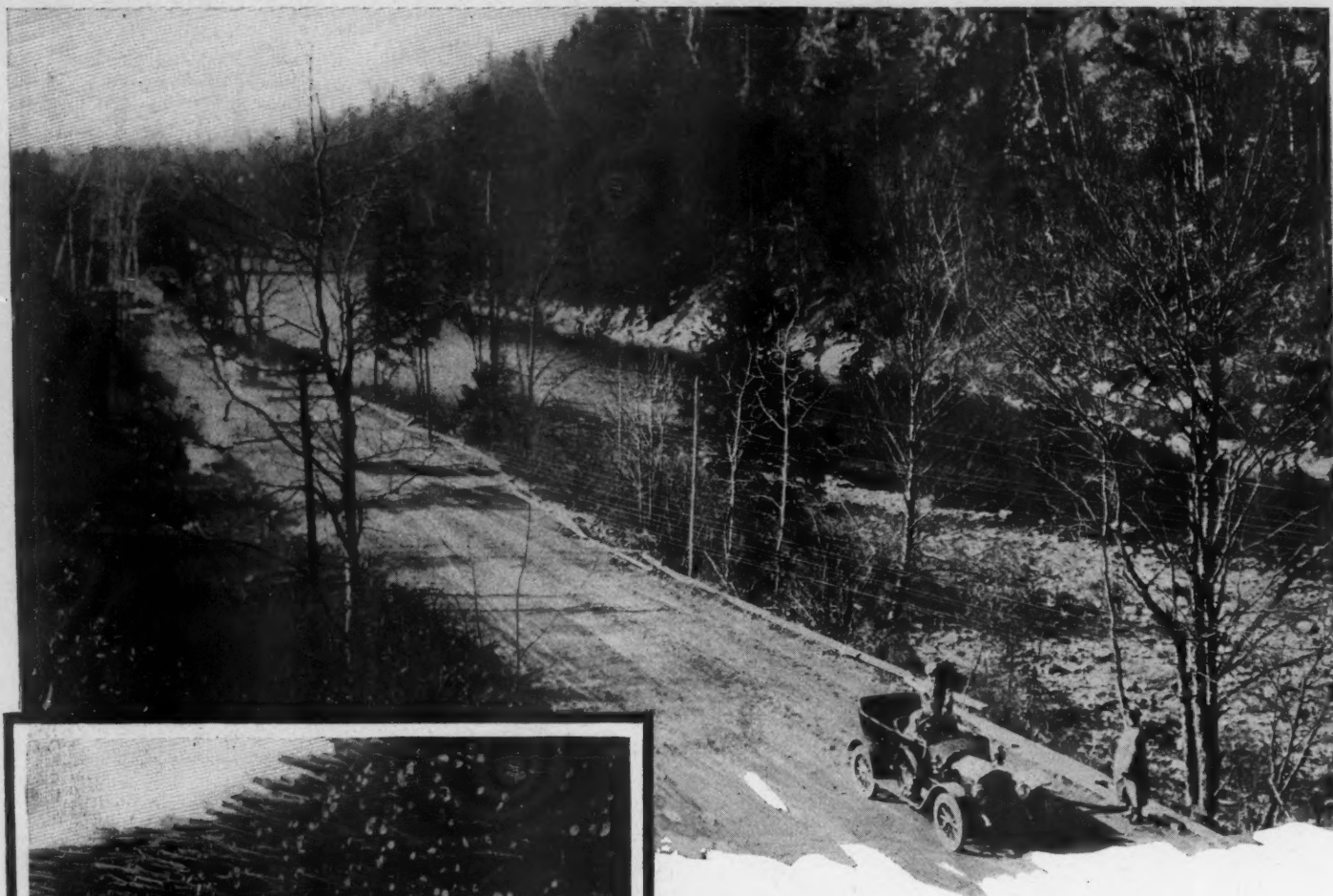
IN no other part of America has motor touring been made so easy to the motorists as in New England. Since 1900 the people of this far-famed section, once the cradle of the nation, have been working for the pleasures of the motorist and incidentally their own pockets. The New Englander has built modern roads for the car, he has modernized his hotels, he has built iron and cement bridges, he has erected signboards, he has published road books, he has opened his door to this knight of the present century so that he may enjoy the land, may see its people face to face instead of looking into the back yards from a railway train, may breathe the invigorating airs, may thread the mountain passes, follow the sinuous courses of its streams and skirt the boundaries of its many lakes. In a word, New England has realized in advance of other sections of the country that the

IN THE PICTURESQUE ADIRONDACKS—
ROAD NEAR LAKE PLACID

motor car is to be the big factor in a summer vacation, and that to get the car with its pleasure seekers there must be roads and hotels, if nothing else to attract the tourists.

So great has the influx of the motor car become within the last 2 years that hotel men have banded themselves together in New England with the object of making it easier for the motorists to really enjoy the touring in that section. The

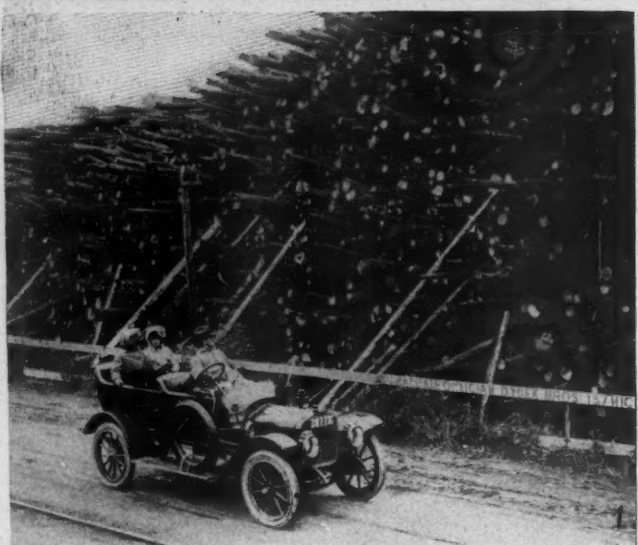
Photo by N. Lazarnick



Photos by N. Lazarnick

ALONG THE AMMONOOSUC RIVER

This scene is a few miles from Woodville, on the road to Bretton Woods by way of Littleton and Bethlehem. The road is broad and of the best macadam structure and leads through one of the finest parts of the run to the White Mountains



1—PILES OF LOGS FOR PAPER TRADE IN VERMONT
2—ALONG THE CONNECTICUT IN VERMONT

New England Hotel Association is an organization of hotel men in business in the states of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut, representing over 100 hotels in this territory. These men have joined hands to assist one another. They have, with the aid of the Blue Book, outlined a series of ideal tours throughout New England, embracing those towns, cities and resorts in which their hotels are located. They have issued maps of the entire New England area with the routes outlined, and on them the names of the hotels in the different cities and towns; and they have also printed on these tours the numbers of the routes as printed in the Blue Book, so that a party contemplating a tour has but to study the map, select which tour is to be taken and then buy a Blue Book. The daily routes can be found in a minute or so, with complete route directions for every turn in the road, so that a trip of a day, a week or a month can be made without once having to stop and inquire the road from a wayside farmer. These maps are on the desk of every New England hotel; they are side by side with the railway time table; and in addition to these many of the hotels have issued booklets giving routes in the immediate locality. So eagerly has the motor tour been taken up by the hotel men that some of the hotels have scenic routes printed on the back of the menu card in the dining rooms. An example of this is Hotel Wendell at Pittsfield, which last summer printed a map with complete road directions of the Jacob's ladder route from Pittsfield to Springfield, Mass.

Making it Attractive to Tourists

While the hotels have been doing their part to make touring easy and comfortable in New England the legislators and good road enthusiasts have not been idle. Good roads are being built all through New England. In Massachusetts state macadam roads connect all of the leading centers. Many of these are macadam in the regular sense of the term, but there are hundreds of miles of oiled roadways



Photos by N. Lazarnick

THROUGH THE ADIRONDACKS

This illustration is typical of many through the Adirondacks on the road from Elizabethtown to Lake Placid. It was taken last October after a heavy rainstorm. The white birches are characteristic of the entire Adirondack section. The road has a hard gravel bed

that are as good as the driveways in Jackson park, Chicago, or Central park, New York. The tourist will drive over black oiled roads through the forests of the Berkshires, in places where there is not a house in sight; he will drive over asphaltum roads that shed every drop of water as he goes over the Jacob's ladder route, which at one time was a sand trail over steep hills, but is now as good a road as the Cliff drive at Kansas City. No longer is the oiled roadway confined to the city park drive or the road race course. New England is using it through its agricultural sections; and why? To make it pleasant for the tourists, because where the tourist goes there will he spend his money.

New England Roads Are Masterpieces

Connecticut has its boulevard roads. In Vermont the roads are not as good, but they are being improved with amazing rapidity. Up the Connecticut river valley the steam road roller is met within 10 miles from any town or village, right out among the forests along the river banks. Broad, modern stone roads are being built so that the New York motorists will have what might be designated an interstate highway from the metropolis right up to Bretton woods in the heart of the White mountains. It is solely for the motorists' trade that these roads are being built, because with the roads the tourist will be brought through Vermont and given an opportunity of spending a week or fortnight among its hills or the neighboring hills of New Hampshire.

The New Hampshire roads are superior to those of Vermont and particularly in the White mountain section. Oiled stone roads are becoming numerous and the roads are now so good that a medium powered car can in the latter half of October and the first week of November makes its 125 miles a day right to the foot of Mount Washington, whether it rains every day or not. The unimproved roads are good stone ones, not wide, it is true, but wide enough for the car; and the new roads that are being built are wide enough for two or three cars to travel abreast. In the heart of the White



1—VIADUCT ALONG THE HUDSON, WATER TO NEW YORK
2—HIGH FALLS ON AU SABLE IN ADIRONDACKS



THE AU SABLE RIVER, WHICH BORDERS THE ROAD THROUGH WILMINGTON'S NOTCH IN THE ADIRONDACKS



Photos by N. Lazarnick

BETWEEN LAKE PLACID AND CASCADE LAKES DURING A SNOW STORM IN THE ADIRONDACKS

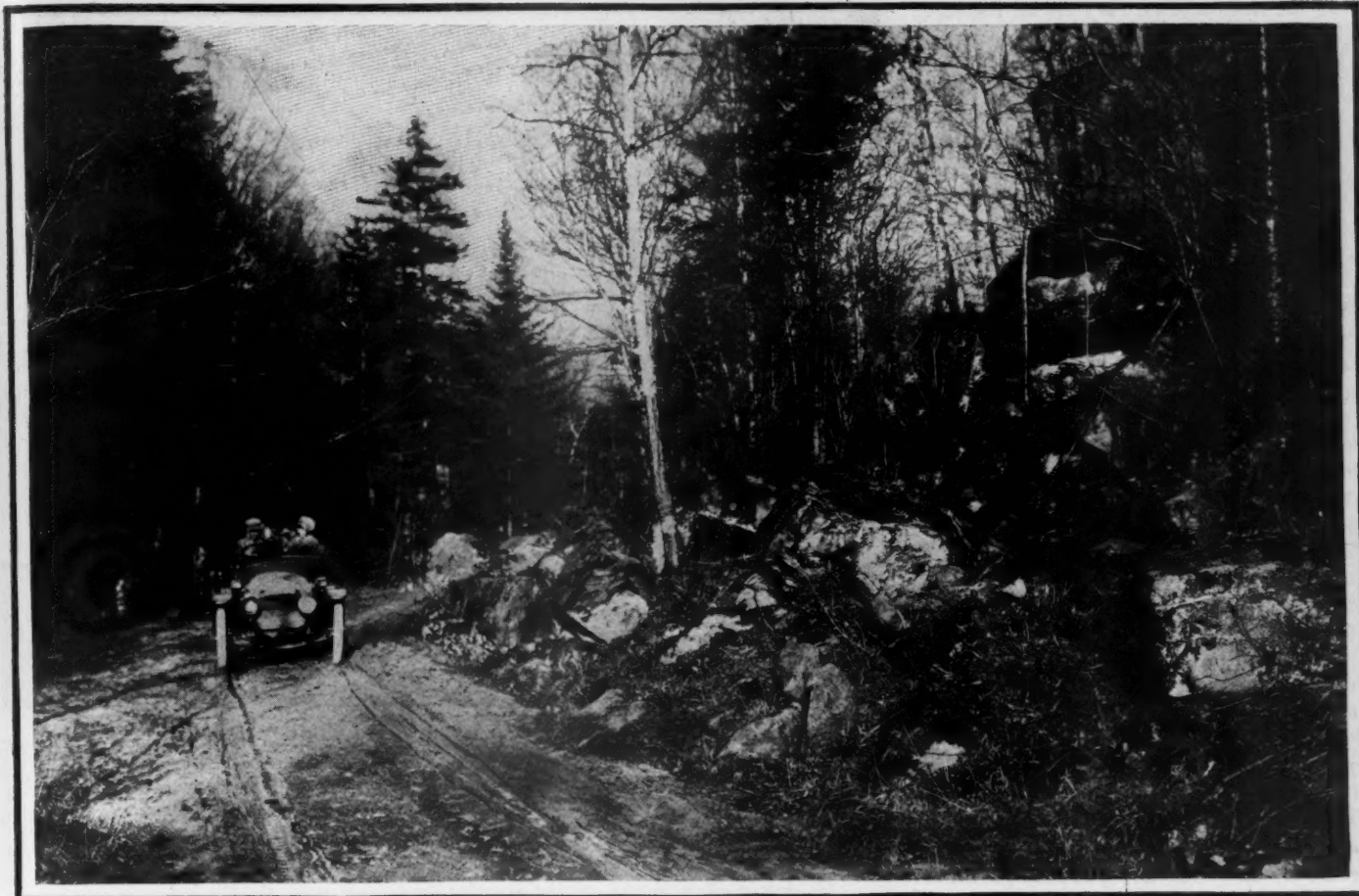
mountains the roads are good. Crawford notch, a few years ago the nightmare of motorists, is now a smooth stone road with iron bridges over the many mountain streams. The grades are steep, but a car can make them at 20 miles an hour. Some of the White mountain hotel men built four or five steel bridges a year ago through the notch in order to make the trip easy and safe for the Boston motorists who reached Mount Washington by that route.

Signboards are everywhere. Some of them have been erected by local motor clubs; many by the Automobile Club of America; and some by the hotel men and private citizens. These signboards are great adjuncts to the Blue Book for touring and facilitate the pleasure of a long trip through these sections.

Deciding the Trip

When contemplating a trip through New England it is best, first of all, to decide what is the objective point. This decided, then the outline of the tour becomes possible. There are many objective points in New England. Perhaps the great tourist Mecca is the White mountain section of New Hampshire, with Mount Washington of the Presidential range as the natural center, because around its base, or within a radius of a few miles, are a dozen of the famous big summer hotels, with their golf courses, their tennis courts, mountain drives for motor cars, mountain paths for those who walk, and quiet arbors for those who seek rest.

If the White mountains are not the



THROUGH THE ADIRONDACKS ON THE RUN FROM ELIZABETHTOWN TO SCHROON LAKE. THIS IS ONE OF THE BEAUTY ROADS

objective it may be the far-famed Berkshire hills of western Massachusetts, with Pittsfield as the geographical center and embracing in a radius of a few miles such well known names as Lenox, Stockbridge, Great Barrington, North Adams and many other points. This section is but a day's ride by motor from New York, the distance to Pittsfield, measuring by odometer, but 155 miles.

The Coast Trip

To many it may be the Atlantic coast that fascinates, and if so the route from New York must lie along the Long Island sound through New Haven, New London, passing Newport, Providence and Boston, thence north through Portsmouth to Portland, Me. At Portland you are on the doorstep to the great lake and river pleasure ground of Maine and a good day's run in a car will take you through Poland Springs, with its famous hotels, to Rangeley lakes, the hunting center of the New England country.

To others it may be rolling Vermont with its celebrated Green mountains capped by Mount Mansfield, that attracts; and who could see Vermont and its Green mountains without visiting the lake country with Lakes Champlain and George nestled end to end but a half day's ride from Albany. With Lake Champlain seen the eye has beheld the blue peaks of the Adirondacks just across the lake in New York state. You cannot see Vermont without seeing Lake Champlain and you cannot thread this pleasure vein without visit-



Photos by N. Lazarnick

ALONG THE BANKS OF THE CONNECTICUT RIVER BETWEEN BRATTLEBORO AND BELLOWS FALLS, VT.

ing the Adirondacks; they are all together; you head westward from Montpelier for Burlington on Lake Champlain and before you have left the Green mountains behind you Lake Champlain is at your feet, and just over it are the Adirondacks. It is step from one pleasure ground over another to a third, all in one short autumn day, if you have the good luck to make the tour towards the end of the beautiful October weather.

White Mountain Routes

Such are the objective points for a 10-day trip, for a month trip or for a 6-weeks trip through New England. Suppose you want to make the White mountains your objective: There are four leading routes there: First: The coast trip through New Haven, New London, Boston, Portsmouth, Portland, Poland Springs to through Crawford's notch gives the benefit of the ocean breezes and those of the sound. The road is through rolling oceanside country until leaving Portland, Me., where several miles of forest and hill are encountered until the mountains are reached. This is a popular route.

Second: The pleasure vein route from New York to the White mountains is up the Connecticut river valley. Springfield, Mass., marks the starting of the picturesque part of this trip. To Springfield there are many routes: You may go direct from Gotham along the sound to New Haven, then north through Meriden and Hartford to Springfield. If you are not in a hurry and want an easy 2-day run to Springfield through a most beautiful route embracing the heart of the Berkshire country, start north along the Hudson river to Peekskill, then take the back road around Storm King mountain to Poughkeepsie. At this point bear east through Amenia, Lakeville, Great Barrington to Pittsfield. From here follow the Jacob's ladder route to Springfield through Lenox, Lee, West Becket, Huntington, Salmon Falls, Westfield and West Springfield.

From West Springfield north you follow the Connecticut river to Wells river, and here you turn right along the banks of the famous Ammonoosuc river right up to Bretton woods. The Connecticut river valley is the renowned pleasure vein of New England. The road follows the river bank for hours, so close at times that you can toss a stone over the fence into the stream, and at other times it is lost for a time only to be seen winding serpent-like in a beautiful valley between opposite hills, when the car has mounted one of the long hills that abound on both sides of the valley.

There yet remain two other routes to Bretton Woods and the White mountains. One is the Berkshire-Champlain route; the other the Boston-Merrimac river route. The Berkshire-Champlain route is the more beautiful, as it takes the motorists through the heart of the Berkshire hills and gives an option of skirting Lake Champlain or crossing the Green mountains of Vermont.



THROUGH WILMINGTON NOTCH IN THE ADIRONDACKS

One of the finest drives in the Adirondacks is from Elizabethtown by way of Keene Center, thence to Upper Jay, thence through Wilmington notch along the banks of a branch of the Ausable to Lake Placid, the big hunter's camp of the Adirondacks. The trip is one of the finest in the Adirondacks and is a short day's ride from Elizabethtown



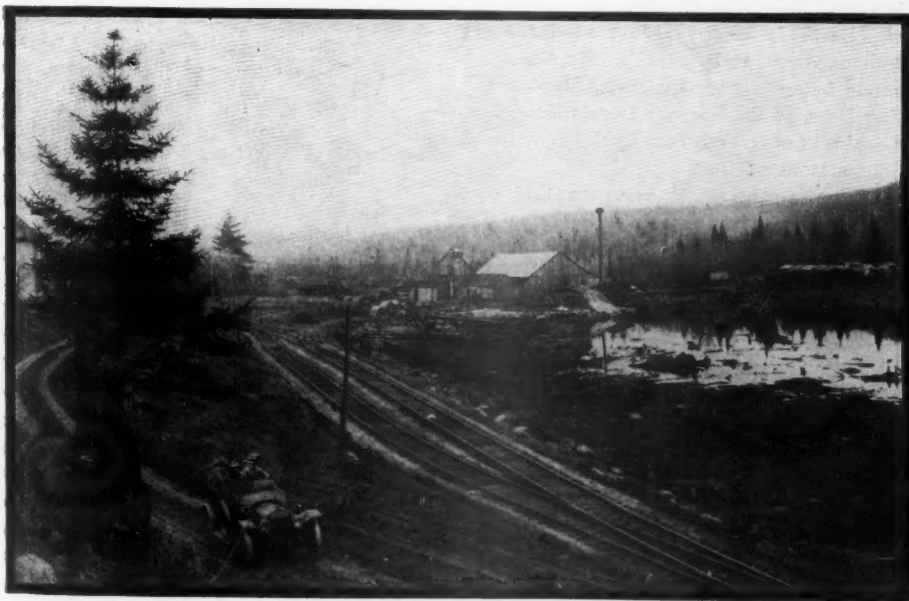
ALONG THE CONNECTICUT RIVER NEAR FAIRLEE

The main road from New York to Bretton Woods follows the banks of the Connecticut river from Springfield, Mass., to Wells river, at the junction with the Ammonoosuc. This scene is a typical one, with the high rocks on one side and the river on the other. The scene is one of beauty from start to finish and is certain to fascinate motor tourists



ALONG THE WINOOSKI VALLEY IN VERMONT

This illustration shows one of the many pretty water scenes when following the Winooski valley from Montpelier to Burlington. The waters are clear and cool, the rocks precipitous and the road skirts the margin of the water. This is one of the finest views that motorists will encounter in their journey through New England and is well worth the trip



IN THE LUMBER DISTRICT OF VERMONT

This is a photographic reproduction of Miles Pond village, 14.5 miles from St. Johnsbury, Vt., on the road to Gorham, N. H. The lumber interests have culled the best trees from the locality and an air of desolation pervades the entire section. It is in spite of this a picturesque Vermont scene and teaches one the value of forest conservation

From New York the route leads north to Pittsfield by the route already mentioned along the Hudson, or inland by way of Danbury, Waterbury, Great Barrington and Stockbridge. From Pittsfield it goes north, still in the Berkshire country, to Manchester and to Rutland. Here options are met with, the motorist being free to cross the Green mountains by way of Woodstock to White River Junction and thence up the Connecticut valley; or go north through Royalton to Barre and thence east to Wells river and up the Ammonoosuc; or from Rutland he can go north to Lake Champlain as far as Burlington and then turn due east through Montpelier, St. Johnsbury to Littleton, Bethlehem and Bretton Woods.

On all four routes the roads are good, the hotels are good and the scenery is attractive every mile of the distance.

The route selected depends on your own ideas of a tour. Each route allows of many side trips. For example, when at Burlington, Vt., you can put your car on one of the Lake Champlain steamers and go to Plattsburg, Port Kent or Westport, and at any one of these points you are at the foothills of the Adirondacks and you can plan 1, 2, 3, 5 or 10 days of trips through this section of these New York mountains. The roads are good, well sign-boarded and the New York edition of the Blue Book gives you every road direction through a lot of the mountains as well as the entire state of New York.

Arrange Circuit Tours

It is questionable if in any other section of the country the beauty spots permit of being linked into a circuit so readily as do the pleasure centers of New England. It is possible in the short period of 10 days to take the coast route to White mountains; cross into the Lake Champlain country through the heart of the Green mountains of Vermont; come south through the Berkshire hills; enjoy, by doubling back a little, the famous Connecticut valley; and view the lordly Hudson for 100 miles or so. The motorist can plan his itinerary as suits his fancy, going north by the coast, by the Connecticut valley, or through the Berkshires; he can come back by any one of these routes and he can cross from one route to another, enjoying one part of the distance and then digressing a little so as to enjoy another. He can circle around for a week or a month without any trouble as to where he can go and where he can stop. He will always find the ever willing hotel man on hand with his Blue Book; he will find the hotels good and not expensive; and if he desires he can avoid the large cities and yet have as good food and as good accommodations as he has been accustomed to in New York or Chicago, and at very much less expense. If he wants to he can stop at some of the big summer hotels every night until October 1 or 15 and some of them are now keeping open until November 1, solely to accommodate those



ALONG THE CONNECTICUT

These are two typical Vermont scenes along the banks of the Connecticut on the run from Springfield, Mass., to Woodville, N. H. The road skirts the base of high, rocky hills and at other times leads through sylvan shades

tourists who want to enjoy the beauties of nature in the million-colored hues of autumn, after the summer visitors have left the happy pleasure ground. The tourist can plan a month's tour and keep out of cities, with the possible exception of Boston and Albany, which it is convenient to stop at going to or from New York.

Cost of Touring

Many have failed to visit New England because of the expense. They have imagined it requires a fortune to spend 10 days among the hills, mountains and rivers of these states. This is not the case. Touring through New England averages \$5 per day per person. This permits of stopping at the best hotels, with the possible exception of some of the biggest summer hotels in the White mountain sections in the tourist season. A party of four, for example two married couples, can go nicely at this price, which includes all tips for porters and incidental expenses. Garage charges are \$1 per night stop; gasoline ranges from 15 to 25 cents; oil sells from 50 cents to \$1.50, according to quality, and other supplies are sold at regular prices.

With prices at this rate it does not cost a party of four any more, or in fact as much, to make a trip through New England and by motor car, if they own the car, than it does to make it by train and trolley. Last autumn a party of four traveled by motor 1,100 miles in 10 days at an outlay of exactly \$200, or \$5 per person per day, this including garaging, gasoline and oil. Night stops were made at the best hotels en route; including Berkshire Inn, at Great Barrington; the Wendell, at Pittsfield; Hanover Inn, at Hanover; Bretton Arms, at Bretton Woods, the other hotels being closed; Pavilion, Montpelier; Van Ness, at Burlington; Deer's Head Inn, Elizabethtown; and Ten Eyck, at Albany.

Comparisons of Cost

It is interesting to compare this cost of motoring with covering the same distance on train. The advantages of the two systems of pleasure seeking cannot be compared, yet nevertheless the expense feature is interesting. To transport four people 1,100 miles each on train at 2 cents per mile would cost \$88. This does not include any parlor car traveling, which would naturally be indulged in, and for 10 days would at least average \$1 per person per day, making a total of \$40 for the 10 days. It costs money for four people to go from the depot to the hotel and back for 10 days, not to mention livery bills to snatch glimpses of the towns. At inside calculation this will amount to 50 cents per day per person, giving a total of \$20 for the trip. Then there are hotel accommodations for four people for 10 days, \$150 at the inside. Recapitulating, the following items appear:

Railroad fare.....	\$ 88.00
Pullman parlor car fares.....	40.00
Buses and liveries.....	20.00
Hotels	150.00
Total	\$298.00

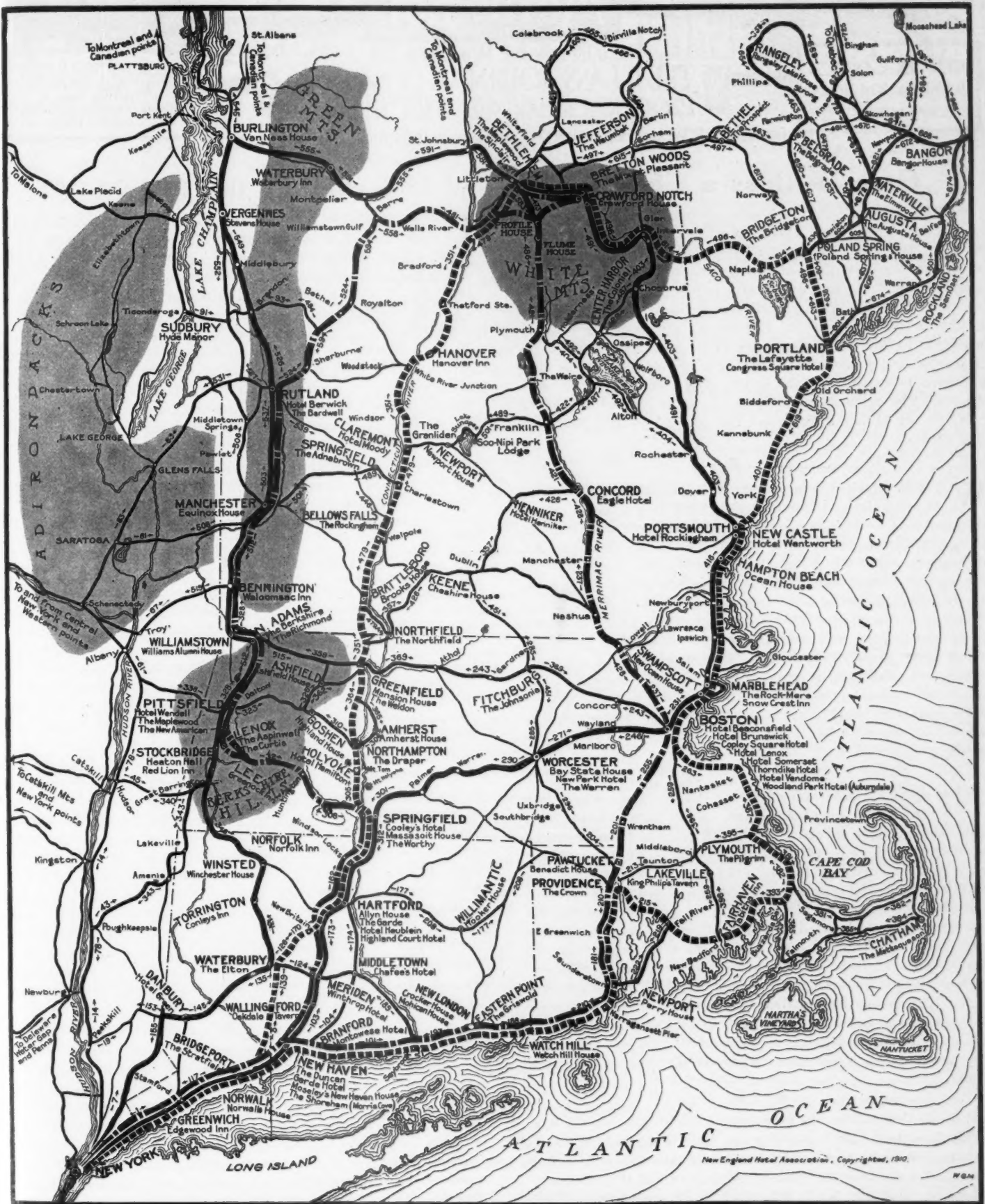
Ten days with four people in a motor car has cost but \$200 and it is out of the realm of reason to try to compare what the motorists have seen as compared with those who have traveled in the steam train. The motorist has traveled the main roads of the country; he has seen the happy country homes from the front gate, not from behind the barn; he has traveled through the best business and residential streets of the cities instead of running through the cluttered up and dirty sections on the steam trains; he has threaded the mountain passes; skirted the golf grounds of the big summer hotel districts; rested at noonday in the shade on some high hill commanding a view of the distant mountain tops or a limpid lake spread out in the valley before him; he has breathed the pure air instead of the soot and grime of the steam locomotive; in a word, he has seen the land as it was to be seen; he has seen it face to face; met the people face to face; talked to the people face to face; studied the people; refreshed himself and invigorated his nerves and sinews and made himself ready for an all-fall-all-winter-all-spring campaign with the business necessities and problems of life.

The Joys of Motoring

Compare this with the same kind of a vacation in which the motor car does not figure. The vacationers make a flying trip by train to the summer resort which they have picked out as the place in which they will spend their vacation. They get there in a few hours and with only an idea of the scenery as viewed from the train's windows. They know nothing of the enjoyment to be had from investigating unknown roads, winding through picturesque forests, viewing rippling streams and placid rivers, passing through quaint little towns. In a word, it may be compared with eating the noonday meal at a get-lunch-quick counter and eating it in the quiet seclusion of one's home.

That isn't all. Arrived at the summer resort, one finds himself with all kinds of time on his hands and without means of really enjoying the vacation without the assistance of a motor car. There is little temptation to make trips throughout the country in a horse-drawn vehicle. There's really nothing attractive about such a jaunt. So one falls into lazy ways—sleeping late in the morning, idling about the hotel until lunch time, eating and then wondering what to do until it is time to eat again. In the evening there is more relaxation in the way of dancing, perhaps, but really the day has been wasted.

On the other hand, the motorist vacationing in the wilds of New England can find many attractive things to do. Up with the lark, he and his party can be miles away by the time the non-motorist is breakfasting. Probably by noon the car will be 100 miles away and by night, when the motorist returns to his headquarters, he has had a day that has been really a vacation—one well worth the while.



TOURING MAP OF NEW ENGLAND SHOWING THREE IDEAL TOURS

Three ideal tours throughout New England are shown in this map, each tour being shown by a different line. These tours all reach Bretton Woods, N. H., the heart of the White mountain section. One tour follows the coast through Boston; another goes up the famous Connecticut river valley through Brattleboro; and the third goes through the Berkshire country by way of Lenox and Pittsfield and thence north through Rutland and the Green mountains of Vermont. An option is given by way of beautiful Lake Champlain, with the Adirondacks just across the lake, in the state of New York and so outside of the confines of New England



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Give Dealers a Chance

THERE are many makers who are not today giving their agents a fair deal. There are makers who will sell one car to a business man in some small town, where they have not an agent, on the pretense that that man will become a bona fide agent, whereas the man only wants to buy a car at the dealer's rate in order to save a little money. Cases by the score of this nature are on record today. It is unjust for the maker to treat his agent in this way; and so long as the maker continues to do it just so long will there be cutting of car prices; and so long as there is cutting of prices will there be poverty-stricken dealers. The car maker must protect the dealer and he can do this by not selling direct from the factory to any but bona fide agents.

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WHERE a maker sells one car at a dealer's price, without any stipulations requiring the buyer to guarantee to sell so many cars, he is working against his own best interests. He is openly inviting the dealer to cut prices; he is killing his own interests and also those of his dealers. Once a private citizen realizes that he can get a car at dealer's prices direct from the factory, it is going to be very difficult for any dealer to sell that man a car at list. By his inconsiderate act the car maker is encouraging an evil that at the present time he should be using every effort to stamp out; he is encouraging a condition which today has many salesrooms filled with second-hand cars in which the dealer's profits are all tied up; he is encouraging a condition which he will have to fight against before 2 years have elapsed or else get a lot of new agents and cut the prices on his goods.

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THE agent must be protected. As it is he has the poor end of the bargain with the factory. A few factory heads have been magnanimous enough to recognize this and have set about to bear their share of the burden, but this is true only with a very small minority of the makers. The maker has been the czar, the autocrat, demanding his deposits months in advance and often shipping his cars in an untried-out condition so that the agent actually has had to spend money on these cars before they could be operated with any measure of success by the buyer. This is true of a great many cars being delivered at the present time, in spite of the much rumored final road and other tests. The dealer has carried this burden for years without recompense and in return for it he finds that the factory is selling one car to an individual in some town in his outlying territory under the pretense that the buyer is going to become a dealer.

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IF the dealers are not in a healthy condition the factory cannot be either. The big problem at hand is the merchandising of cars, and in this the factory and dealer have to work hand in hand. This demands the closest co-operation and the most careful study. It demands the protection of the dealer against pretending agencies in his territory and the individual selling of cars direct from the factories; it demands the co-operation of the dealer to solve the much-mooted second-hand car problem; and it demands the co-operation of the dealers in the protection of owners against swindling schemes of so-called dealers' organizations, which are working in order to buy goods at dealers' prices when they should be compelled to pay consumer's price.

Selling the Cars

UP to the present the great efforts of motor car builders have been directed to the task of building cars; studying the best metals suited for the different parts; studying the most suitable motor designs and obtaining the maximum power; solving the problems of body manufacture and design; organizing factories so as to turn out cars faster than any other factory; securing from the maker of factory machinery the biggest possible multiple machines so that as high as sixty-four cylinders or other parts can be worked upon at one time with one machine; building new factories so as to hasten manufacture; installing special testing laboratories to insure well tried out motors and gearsets before installing them in cars; building outdoor tracks for the use of testers; organizing intricate inspection departments; fitting up chemical and metallurgical laboratories; building commodious selling branches throughout the country; deciding which agent shall and which shall not handle the product in certain cities; and visiting foreign factories to get the latest ideas in design and shop practice.

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FOR the immediate future the big problem is selling the cars. With many factories up to the present the duty of the sales manager has been that of a mathematician, who knew that the factory could build only 2,000 cars, and his duty was to divide this output up among the many dealers so as to satisfy as many of them as possible, many of these dealers visiting the factory every 10 days or 2 weeks in the effort to get some more cars. This is all changed. It is no longer a problem of distribution and filling orders, but one of selling cars. Up to this time the dealer has been left to himself, he has been a law unto himself. The factory has not bothered much with him, except to satisfy his thirst for cars and get his deposits. Now the dealer requires help and the factory will have to come to his rescue, in many cases the dealer can solve the problem without the assistance of the factory. But whether the factory comes to his assistance or not the fact remains that the big task for the next 2 years, at least, will be that of selling cars. Up to this time many factories have forgotten that there exists such a science as that of salesmanship. The big demand for cars has blinded them, they have boasted that they were princes in salesmanship, but today they are discovering that they are very small children in the school of this present-day science. Many of them are already crying for help and are calling to other industries to "Come over and help us."

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FILLING orders is much different from selling cars. Within the last 6 months many so-called, high-class salesmen have slipped into the background and new faces have taken their places, faces never before seen in the motor industry, but faces well known in some other industries in which the science of salesmanship has been developed to a high order. Many dealers and branch houses are looking for salesmen and they are announcing that previous experience in selling motor cars is not a requisite. What they want is salesmanship and they are willing to pay for it. One president announced that he wanted a man who scarcely knew a man in the car industry, he wanted a salesman, knowing that salesmanship in one industry is very similar to that in another industry, and that he would soon be able to master the local features of motor car salesmanship. The same laws that apply to salesmanship in many established industries apply with equal force to the selling of motor cars at the present time.

New Ideas for the 1911 Glidden Tour

NEW YORK, April 17—The eighth annual reliability tour of the American Automobile Association, which will leave the capitol at Washington, D. C., June 26 and head for the Canadian capitol at Ottawa, will cover approximately 1,091 miles and incidentally will introduce during its week of running some brand-new wrinkles never before incorporated in the classic tours for the famous trophy. It will be known as the Glidden reciprocity tour. Entry blanks were issued last Saturday.

The contest will be promoted by and under the 1911 reliability run rules of the A. A. A. There will be three trophies—the Glidden trophy, which is a sweepstakes prize this year, to be awarded to either the touring car or runabout entry making the best combined road, technical and hill-climbing score.

The Washington trophy, a new prize introduced this year, is to be awarded to the touring car making the best combined road, technical and hill-climbing score. The award of the Ottawa trophy will be to the runabout making the best combined scores as mentioned above. In case of a tied score between the touring and runabout classes, the basis of award of the Glidden trophy will be the number of passengers carried by each of the tied cars throughout the entire tour, the one carrying the greatest number of passengers winning. The contest will be a grade I affair in accordance with rules for 1911, Nos. 400 to 526.

Introducing a hill-climbing contest as a portion of the tour is a distinct innovation. This will take place at Montpelier or another Vermont town on the fifth day of running. Details of this climb, which is to be under the supplementary regulations, will be made shortly. It may be mentioned, however, that cars will be obliged to enter the slope-conquering test with full touring equipment and with the same gear ratio and passenger load as during the rest of the tour.

Observers will not be military students or soldiers as has been rumored, but instead will be persons named by the entrants, in accordance with rules 465 to 468, inclusive. All will be obliged to pass examinations as to fitness. Because of the army maneuvers in the south it was impossible to secure military observers.

WILL TRY OUT GASOLINE

Chicago, April 16—Motorists throughout the country will watch the results of the fuel economy test of the Chicago Motor Club, set for May 25, to Milwaukee and return, for the affair has been given national importance by the entry of three cars by the Standard Oil Co., which has set out to prove to the motoring public that 54 gasoline is as good for their use as the higher grades, while at the same

Washington Trophy for Touring Cars and Ottawa Cup for Roadsters—Hill-Climb Probably Will Be at Montpelier



April 16-23—Show in Prague, Austria.

April 20-22—Three-day run of Lancaster County Auto Trade Association of Lancaster, Pa.

April 22—Redlands annual hill-climb. Redlands, Cal.

April 23-28—Touring car contests in Modena, Italy.

April 29—Quaker City fourth annual social run, Quaker City Motor Club.

May 5-8—Reliability run from Los Angeles, Cal., to Lakeside Inn and return.

May 7—Targa Florio road race, Italy.

May 14—Cataluna cup road race, Spain.

May 16-19—Four-leaf clover endurance run of Automobile Club of Washington, D. C.

May 21—Hill-climb, Limonest, France.

May 21—Ries hill-climb, Austria.

May 25—Touring car kilometer speed trials, Le Mans, France.

May 25—Fuel economy test, Chicago Motor Club.

May 27-31—Five-day tour to Indianapolis of Chicago Automobile Club.

May 28—Hill-climb, touring cars, Le Mans, France.

May 28—Touring car reliability trials in Germany.

May 29-31—Tour to Indianapolis of Chicago Motor Club.

May 30—Five-hundred-mile international sweepstakes race, Indianapolis motor speedway.

May 25 or 28—Meuse hill-climb, Belgium.

June 1—Speed trials, Bucarest, Roumania.

June 4—Hill-climb, Trieste, Australia.

June 18—Voiturette and light-car road races, France.

June 19-25—Glidden tour from Washington, D. C., to Ottawa, Canada.

June 22—Algonquin hill-climb, Chicago Motor Club.

June 25—Grand prix of Automobile Club of France.

June 25-July 2—Endurance contest, Denmark.

July 4-20—Prince Henry tour.

July 9—Mount Cenis hill-climb, Italy.

July 13-20—Ostend week, Belgium.

July 21-24—Meeting at Boulogne-sur-Mer, France.

August 6—Mount Ventoux hill-climb, France.

August 25-26—National stock chassis road races, Chicago Motor Club, Elgin, Ill.

September 2-11—Agricultural motor vehicle show, Roubaix, France.

September 9—Grand prix of Italy, at Boulogne, Italy.

September 10-20—Voiturette and small-car trials in Hungary.

September 16—Touring car competition, St. Petersburg-Sebastopol, Russia.

September 17—Semmering hill-climb, Austria.

September 17—Start of trials of l'Auto, France.

October 1—Gallion hill-climb, France.

October 9-13—One-thousand-mile reliability run, Chicago Motor Club.

time being cheaper. The Standard Oil Co. will start three cars—Halladays—all of the same model and style of equipment. One will burn 54 gasoline, another 62 and the third 76. The same make of carburetor will be on each and every effort will be made to have all conditions alike for the three cars. This decision on the part of the oil company to participate in the contest was brought about by the recent attempt in Michigan to enact a law which would forbid the sale of gasoline below 66 grade in the state. The company proved that this would be detrimental to motoring interests and the bill was killed.

WOLVERINES WILL RUN MEET

Detroit, Mich., April 15—The Wolverine Automobile Club has expressed an intention of entering the field of race-promotion and has plans under way for a meeting, to be given here July 4. The club has appointed a contest committee, the chairman of which is Walter H. Wilmot, manager of the D. A. D. A. show. Wilmot expects to stage the meet on the state fair track, though it is understood the Grosse Pointe course also is available for the purpose. Just how this plan will coincide with the schedule of the national circuit is not known. The Wolverine club has no intention, however, of requesting assistance from any other organization in its meeting, so far as a division of the proceeds of the affair is concerned.

The plans of the Detroit factories in regard to racing remain in doubt, aside from the Lozier, which has Mulford and Tetzlaff at the factory, overhauling the cars which they will drive in the various events of the season. The Chalmers factory has stated that it will not send any team around the circuit, but expects to enter occasional meets, according to President Hugh Chalmers.

BLOW FOR UNIVERSAL LIGHTS

Boston, Mass., April 17—The committee on roads and bridges of the Massachusetts legislature did the unexpected last week when it met and reported leave to withdraw on the bills presented by motorists asking that all vehicles carry lights at night. It was very much of a surprise to the motorists, naturally, because a year ago the bill was favorably reported and on the committee were several members who are on the committee this year. Some of the motorists interested in legislation are disgusted with the manner in which the committee has handled the motor problems, and a movement will be started, it is said, looking toward securing an entirely new committee next year by trying to retire some members and electing others, as New Jersey did, and then demanding that the speaker appoint men who will do something.

S. A. E. Would Standardize Solid Tires

Engineers Discuss Proposition, Pointing Out That Business World Demands Interchangeability—Wheel Diameters Also Given Consideration and Committee Makes Recommendations

NEW YORK, April 17—The Society of Automobile Engineers' committee on wheel dimensions for solid tires held last week a conference with representatives of the tire companies, with the object of recommending to the standardization committee of the society the possibility of standardizing solid tires, which is looked upon as imperative at the present time. Standardization of these tires will mean interchangeability, which is demanded by the business concerns buying trucks.

Two of the principal wheel dimensions under discussion were the diameter of wheels for the inside of the tire attachment and the width of the wheel felloe. The tentative recommendation of the society's committee in regard to wheel dimensions, taking the 36-inch wheel in common use as a starting point, larger diameters progressing with increments of 2 inches, was that standard diameters might be agreed upon as follows: 2-inch cross sectional tire size, 31½ inches in diameter; 2½ and 3-inch cross sectional tire size, 31 inches in diameter; 3½ and 4-inch cross sectional tire size, 30½ inches in diameter, and 4½-inch and upwards to 8-inch cross sectional tire size, 29¾ inches in diameter.

Standard Size for Wheels

It is acknowledged that these recommendations conform more nearly than anything else to the present standards. But there is much sentiment in favor of making the wheel diameter the same for all widths of tires, for a given diameter. The principal point under discussion and consideration is what this diameter should be for 36-inch tires—29¾ or 30 inches.

The society's committee recommended, and it is generally agreed that all wood wheels for solid tires should be fitted with a permanent iron band. This is considered necessary to preserve the integrity of the wheels, both in stock and in service. Moisture, etc., cause wheels not iron-banded to open up while in stock, and it is said that 40 per cent of the trouble with wheels in use is due to non-banding.

As to width of felloe the society's committee recommended that for single solid tires the width of felloe be the same as the width of the tire, and double that in the case of dual equipment. For certain structural reasons, it is possible that the width of felloe adopted will be ¾ inch less than the nominal width of tire in the case of singles, and for dual tires twice the nominal size.

It was the sense of the meeting that for demountable tires in either single or dual equipments, it is essential to have dimensions in accordance with those to be adopted for regular non-detachable tires.

The immediate point of interest, and to be disposed of, at this time is that the tire manufacturing companies agree upon or consent to a standard wheel diameter over the permanent iron band, or diameter in the case of a cast-steel wheel.

There is every reason to believe that they will so agree or consent to this. The exigencies of the case, in any broad consideration of the commercial motor car business, demand it. It must become possible to change the make of tire equipment on vehicles without having to modify the wheels, which is now most frequently necessary and is in nature of a brutal and harmful operation.

Would Make It Standard Practice

The S. A. E. is using its utmost effort to properly standardize the subject from an engineering point of view, so that the standard to be adopted shall become general practice. Most so-called standards today are not common practice—and they are not of much benefit unless they are adhered to all along the line by the different manufacturing interests involved. Frequently an apparently small matter prevents for a long time a standard going into its merited use. It is not the intention of the S. A. E. to have standards which are only academic. So far as this tire matter is concerned, there appears to be among tire manufacturers a general willingness to meet the majority opinion of the competent, and to change their manufacturing equipment accordingly. They appreciate that standardization has to come and are

anxious for it. It is practically the unanimous opinion that the commercial motor vehicles at present in service are a very small factor as compared with those that will shortly go into service.

It was argued at the meeting that the work of determining upon a standard detachable rim for solid tires should now be started. Deliberation upon standard dimensions for demountable rims for pneumatic tires is now being had by the S. A. E. committee.

There has been considerable discussion as to whether solid tires below 3 inches in diameter should be standardized on a so-called truck basis. That is, whether, in view of the not infrequent change from solid to pneumatic tire equipment in this size of tire, it would not be better to conform to existing pneumatic tire standards.

Another point under consideration is whether the actual diameter of a tire on a wheel should be very close to the nominal diameter. Given standard wheel dimensions, the overall tire diameters will, within limits, of course, depend on the tire heights; that is, the depth of the section of rubber. Rubber diameters after some time service do not remain just what they were at the time the tires were newly put on, and fractional inch variation must, it would seem, be countenanced at the time of installing equipment.

Complex Issues Raised

An investigation of the extent to which, if any, cars are under-tired, as regards size, raises several complex issues. It is perfectly clear that there should be a standard table of weight-carrying and speed capacities of tires. Here average must prevail. Strangely enough, geography figures; the nature of the roads and topography are elements in the case. Again, in some instances, commercial motor vehicles are guaranteed to carry certain overloads over



KALAMAZOO, MICH., HOLDS A LATE SHOW

the rated carrying capacity of the rig. The society standards committee is composed of about eighty members. This committee is divided into divisions or sub-committees, which take up, duly consider and recommend as to various engineering points. These divisions, in turn, report to the whole standards committee, which passes on the matters in hand. If the vote of the standards committee be favorable on a report, the council of the society, that is, the governing board, decide whether the recommendations of the standards committee shall be submitted to the whole society membership for acceptance.

REEVES JOINS UNITED MOTOR

New York, April 14—Alfred Reeves has tendered his resignation as general manager of the Association of Licensed Automobile Manufacturers and on May 1 will become general sales manager of the United States Motor Co., with headquarters in New York.

Mr. Reeves has been identified with the motor trade since its inception and for the past year and a half has been general manager of the Association of Licensed Automobile Manufacturers, which is now merging into the new Automobile Board of Trade that was incorporated at Albany yesterday. Prior to that he was general manager of the American Motor Car Manufacturers' Association. Who will become manager of the Automobile Board of Trade has not been announced. No action is expected for some time.

The incorporation of the Automobile Board of Trade was accomplished yesterday at Albany, the following directors being named: Charles C. Hanch, Indianapolis; Charles Clifton, Buffalo; Hugh Chalmers and Sidney D. Walden, Detroit; Benjamin Briscoe, New York; Thomas Anderson, Cleveland; Samuel T. Davis, Jr., Bridgeport, Conn.

Models for Next Year Are Announced

Several Detroit Makers Out Already With 1912 Cars—Packard Adds a Six-Cylinder to Its Line, While Lozier Will Make the Six Its Leader—Buick Company About Ready To Talk

DETROIT, MICH., April 17—One of the features of the present spring has been the unusually early date of the announcements for 1912, made by several of the local factories. Usually these have been withheld until July or August, or even later. This year the Packard and the Lozier already have made their formal statement of the characteristics of their lines for the coming year. Several other factories will follow in a few days. Among these will be the Buick, which already has three of its 1912 models in the hands of testers at Flint. The Regal announced its new models for 1912 some time ago.

The Packard Motor Car Co.'s announcement perhaps was the most interesting, embodying as it does the statement that the firm will, in 1912, produce a six-cylinder car to supplement the Packard 30 and the Packard 18, which have formed the firm's reliance in former years. This company long has maintained an attitude of independence in its manufacture of four-cylinder cars exclusively.

The Lozier Motor Co. announces that it is now in readiness to deliver its 1912 models, which consist of a 51-horsepower six and a 46-horsepower four, each equipped with seven styles of body, four of which are closed. The Lozier six now is in its fifth year.

The Lozier announcement follows shortly on the occupation by the company of its new factory in Detroit, which will work solely on the 1912 models. The factory is now in operation and will, by the time

it is under full way, employ a total of 1,500 men. Production will be limited to 1,000 cars, every part of which, it is stated, is made in the Lozier shops at Detroit and Plattsburg, N. Y.

It is a significant fact that of the experimental models now in the hands of the expert drivers of the various Detroit factories there are several of six-cylinders. One of the largest Detroit factories which makes a specialty of medium-priced cars will be represented by a six next season, but the formal announcement of the fact will not be made until later in the spring.

DEVELOPING EXPORT TRADE

Detroit, Mich., April 16—The development of the export trade, so prominent a feature of the early spring and late winter, has increased steadily among the local factories. The Packard company announces the establishment of a Paris retail branch in charge of Hubert Hughes, a technical expert. This is a distinct innovation in the policy of this concern, which has heretofore limited its sales to the United States, Canada and Mexico. The Paris branch has been maintained for several seasons, but merely as a sort of clearing house for Packard owners traveling in Europe, for whom it provided repair parts and road information. The Packard also is establishing a retail venture in Buenos Ayres. This will be managed by Lewis R. Mack, formerly connected with the Packard agency in Boston.

The Warren Motor Co. also has established an export department, placing it in charge of E. W. Hoffman, of New York, formerly connected with Markt & Hamaker, well known exporters. England, Denmark, Russia, Ireland, Argentine republic, Uruguay, Porto Rico, Cuba, Australia and New Zealand are the countries which will be invaded. In all these countries Warren cars now are in operation at the present time.

KALAMAZOO HOLDS A SHOW

Kalamazoo, Mich., April 17—Kalamazoo's first show proved such an unqualified success that dealers are all enthusiastic in agreeing to repeat the exhibit next year. The show, which was held in the new show rooms of the Reid Auto Co., attracted thousands and not a few sales were made. The following cars were on display: Buick, Oldsmobile, Cadillac, E-M-F, Everitt, Hudson, Maxwell, Hupmobile, International truck and Detroit electric. The decorations were apple blossoms, palms, flags and bunting. David Reid, proprietor of the Reid Auto Co., was promoter of the show.



BUSINESS SHOW HELD AT KALAMAZOO, MICH.

Maine Sets New Motor Law Standard

After Next January Cars Will Be Licensed on a Horsepower Basis—Other Clauses Are Satisfactory—Legislature Will Give \$250,000 Annually for Building and Repairing Highways

ANGOR, ME., April 17—The Maine legislature has completed its labors and has gone home after passing many laws, among them a couple of interest to motorists dealing with motor vehicles and also highways. The law governing the appropriation of money for state highways, amended so that instead of a tax of three-fourths of 1 mill of every dollar of valuation being set aside for the purpose there is now to be appropriated each year \$250,000 annually for the exclusive use of building and repairing highways. Any unexpended balance from one season is to be added to the next year's appropriation. Already plans are being made to construct some thoroughfares that will be main highways and improve others.

Guide Posts Are Ordered

Another law that is worth mentioning has been passed also. This requires every town to erect and maintain at all crossings and highways substantial guide posts at least 8 feet high, upon which shall be painted the name of the next town, the mileage, etc. There is a penalty of from \$10 to \$50 for neglecting to put up the signposts, half the fines to go to the prosecutor, the other half to the county.

The motor law has been patterned after some of those in Maine's sister states in New England. For the first time Maine will base its fees according to horsepower. For 20 horsepower and under it will be \$5; between 20 and 35 horsepower it will be \$10; for all over 35 horsepower it will be \$15. Motor cycles are to be charged \$3 and motor trucks, traction engines and log-haulers are classed at \$10 each. The speed is to be 25 miles in the open country and 10 miles within compact sections of towns and cities, except that cities or towns may by law or ordinance allow a greater speed.

Hill-Climbing Permits Possible

Permits may be granted by municipal officers for hill-climbing contests. Dealers must pay \$25 for the registration of their cars. No person under 16 shall be given a license to drive cars. The secretary of state is empowered to make any applicant for a license prove that he is capable of driving a car, and that officer may suspend a license at any time he sees fit for violation of any part of the law. Non-residents may operate their cars in Maine for 30 days, but there is no specification that it must be in any calendar year, so visitors are given wide latitude. For violations of some sections the penalty is from \$10 to \$25 for the first offense; \$25 to \$50 or imprisonment for 10 days for second offenses committed within a year. For

other violations it is not more than \$50 or 10 days' imprisonment. There being no minimum fine, the judges may place cases on file. All receipts from registering cars will go to the highway maintenance fund. The law goes into effect on January 1 next.

A law also was passed settling the Bar Harbor controversy by allowing the building of a road for motorists to the island kingdom.

GET BUSY IN MARYLAND

Baltimore, Md., April 17—Spring work on the state highways has been started by the state roads commission. The commission plans to construct 200 miles of improved roads during the year. It is proposed to make the first expenditure of the \$1,000,000 loan authorized by the last general assembly for the building and purchase of bridges. The first bridge to be built will be over the Nanticoke river at Sharptown. More than \$1,000,000 will be expended on road construction. Negotiations are pending for the purchase of the Baltimore-Westminster turnpike and by the close of the year the commission hopes to rid the state of all the toll gates. Negotiations for the right of way of the Baltimore-Annapolis boulevard are approaching final adjustment. It is expected the boulevard will be completed by January 1 next.

Up to date the state roads commission has spent about \$2,000,000 on road construction. It has graded, bridged and drained 199 miles of road, of which 143 miles have been completed. The roads already selected by the commission for improvements are not far less than 1,000 miles and the cost of completing them by the plan adopted will not be less than \$8,000,000. The 1,000 miles do not include the Baltimore city streets, for which \$1,000,000 of the \$5,000,000 loan was set aside. In addition to this \$1,000,000 to be used for city streets, the voters of Baltimore will decide at the municipal election whether they want the \$5,000,000 paving loan. With the use of this loan, if ratified, it is figured that half the city streets can be ridded of the cobblestones within the next 6 years. The loan has a splendid chance of passing.

ARGUE FREIGHT CLASSIFICATION

New York, April 14—The traffic department of the National Association of Automobile Manufacturers has concluded a session of several days at the offices of the association in this city. The manner of classifying the various kinds of self-propelling vehicles and parts by the east-

ern railroads in their freight classification, which determines transportation charges, was discussed, as well as a proposed revision of freight rates to the Pacific coast.

Recently a 2-hour session was had with the railroads' classification committee during which J. S. Marvin, general traffic manager of the N. A. A. M., and others present urged a general revision of the classification, laying particular stress on carload lots, and a proper recognition and rating for commercial vehicles, which will be shipped in increasing quantities from now on. Mr. Marvin contends that the present classification is founded entirely on conditions surrounding the trade 6 years ago and that sufficient consideration has not been given the immense number of carloads and trainloads of low-priced passenger and utility machines shipped today, while no separate provision whatever has yet been made by the railroads for commercial machines. It was shown that nearly 10,000 freight cars had been used by factories at Detroit alone in January, February and March for the shipment of motor cars and that exports are nearly five times over what they were in 1909, taking the period of 8 months ending February 28 for comparison.

Most of these exports are in the low-priced machines, as the average value is \$1,183, as compared with \$1,840 for the same period 2 years ago.

BAY STATE OPERATORS DINE

Boston, Mass., April 18—The annual banquet of the Massachusetts Automobile Operators' Association, which took place this evening at the Quincy house, brought together many people well known in public life and in motor circles. There were more than 300 at the feast and some admirable addresses were made along the lines of advice to all users of the highways, whether motorists or not. J. Albert Brackett was toastmaster. Mayor John F. Fitzgerald, of Boston, Col. William D. Sohier, of the Massachusetts highway commission, Harry Grant, the racing man, Charles Pollock, of the New York Automobile Engineers' Association, Roscoe Brackett, of the Automobile Operators' Association of New England, George Hovey, president of the Lowell Chauffeurs' Association, and President J. Edward Connors, of the Massachusetts Automobile Operators' Association, were the speakers.

WOULD PUNISH JOY-RIDERS

Detroit, Mich., April 17—Police Commissioner Croul has issued a signed statement in which he requests the assistance of the owners of motor cars in the punishment of thieves whose depredations have been particularly marked during the past month. Mr. Croul calls attention to the fact that the joy-rider nuisance probably is worse in Detroit than in any other American city. He states that since January 1 his department has recovered seventy-nine motor cars, stolen by joy-riders.

He places the damage done to the cars and to other property by these thieves at \$25,000. Among the results of the joy-riding have been two fatalities.

Mr. Croul states that his chief difficulty has been to secure the owners of the cars as complaining witnesses. He professes his inability to understand why thievery of this sort deserves the lenient consideration which it seems to receive. He urges all persons whose cars are stolen to keep in touch with his department, after the recovery of the cars, and to assist in the conviction of the thieves, when they have been captured. While all the stolen cars have been recovered, Mr. Croul does not believe that the work of his department should be forced to stop with the mere recovery of the car.

IOWA HAS A NEW LAW

Des Moines, Ia., April 14—The Iowa legislature has adjourned, but before it dissolved it passed the motor bill introduced by Representative Kulp, the chief feature of which provides for a horsepower tax. The new law becomes effective July 4, 1911, but the Hawkeyes will have to renew December 31, after which all licenses will expire the last of each year. The fees provided for are: For cars of 20 horsepower or less, \$8; above that, 40 cents per horsepower. A flat rate of \$15 is asked for steamers and electrics. Makers and dealers will pay a \$15 registration fee. In the case of new cars the purchaser is allowed 15 days in which to register and can operate the car provided the tag and number of the dealer selling the machine are carried. The registration fees, except in case of tradesmen, is in lieu of all taxes.

ACTIVITY IN OREGON

Portland, Ore., April 15—Motorists in southern Oregon are looking forward to the greatest year they have ever known. Probably nowhere is there more interest being shown than in Cottage Grove, Ore. Under the direction of the Booster Club of that city a fund has been raised which will purchase a rock-crusher and maintain it through the coming summer. The county will aid in the work. It is proposed to build 20 miles of crushed rock roadway through Lane county this summer, starting with Cottage Grove as a center and working each way. C. M. Shinn and O. M. Kern, heads of the Cottage Grove Electric Co., are behind the movement.

At Grants Pass, Ore., the car owners have formed a club and affiliated with the Oregon State Automobile Association. Sixty members are now enrolled and under the direction of H. C. Kinney and V. Prea for an active campaign for better roads will be started.

Roseburg is still another city which has awakened to the necessity of better roads in order that the farmers may do more and faster marketing, a number having recently purchased machines. Under the direction of the Roseburg Automobile Club

Ohio Looks Through Road Microscope

Backward Buckeyes, Now Awake to the Possibilities, Are Planning Inter-County System of Highways That Will Criss-Cross Commonwealth and Tap Every Important Traffic Center

FINDLAY, O., April 17—Ohio will join many other states in the construction of an inter-county system of good roads, which would connect county seats and trade centers and give throughout the state a continuous roadway tapping every section where traffic is noticeable, if the bills introduced in the senate of this state by Senators McGuire and Hudson become laws. That Ohio has been backward in bettering its roads to a point of usefulness is evidenced by the fact that it is following, not leading, in the good roads movement. Many states in the east have spent millions on their roads and in the west several states have taken up or are taking up the work.

The McGuire Bill

Senator McGuire's bill provides for the enlargement of the scope of the state highway commission, among other things giving that office supervision over the construction of any roads built in whole or in part by state aid money. It also provides for an inter-county system of highways which would connect county seats and trade centers. Friends of the measure point to the fact that in many cases state aid money has not been used by county commissioners for road building, but, on the other hand, has been placed in a fund to support salaries, used for repair purposes or placed in the general

fund in order to reduce taxes. They find much to commend in that part of the bill which divides the highway commissioner's department into three bureaus, each to be in charge of an expert. These bureaus will be called departments of construction, maintenance and repairs, and bridges.

The Hudson Measure

Senator Hudson's bill provides for 1/2 mill levy on the grand duplicate of the state, which, it is estimated, would yield \$3,000,000 annually for the cause of good roads. To this sum would be added another \$3,000,000 by counties. The gross proceeds would build at least 1,000 miles of improved roads outside of the roads built by the counties alone. The bills provide that the \$3,000,000 fund thus raised would be divided equally among the eighty-eight counties of Ohio, each county, regardless of size, being privileged to use its share, providing it expends an amount equal to that given by the state.

Building 1,000 miles of inter-county roads each year, the entire system, so badly needed in Ohio, would be completed in 7 years. Thirty-four petitions, asking for 120 miles of road improvements, at an estimated cost of \$720,000, are now on file in the office of the commissioners of Franklin county. The roads petitioned stretch in every direction and touch many important trade centers.

thirty-five prominent business men have been grouped together and will make an endeavor to interest everyone in their portion of Douglas county in the good roads movement.

Eugene, Ore., has the largest motor club outside of Portland and Medford in the western section of the state. Ninety prominent business men are enrolled. They are an enthusiastic organization and will join the ranks of the Oregon State Automobile Association clubs.

ANOTHER AXLE SUIT

Indianapolis, Ind., April 17—Suits alleging infringement of patents, seeking injunctions to keep the defendants from continuing such alleged infringements, and demanding an accounting, have been brought in the United States district court in this city by Thomas J. Lindsay and Willard Harmon against the Cole Motor Car Co. of Indianapolis and the Westcott Motor Car Co. of Richmond. The suits are very similar to that brought recently against the Cadillac Automobile Co. of Indiana. They allege infringement of a bevel gear, floating type axle, covered by patents issued to Lindsay. A number of additional

suits against other companies are to follow.

A report has been filed in the court by Edward Daniels, master in chancery, showing the sum of \$21,137.49 is due Lindsay and Harmon from the Timken Roller Bearing Axle Co. of Canton, O., for royalties on axles. Of this sum, \$18,896 represents actual royalties and the balance interest.

Lindsay and Harmon formerly had a contract with the Timken company whereby the company manufactured axles on a royalty basis. This contract was recently cancelled by the federal court on a cross bill filed by Lindsay and Harmon on a suit brought by the Timken company to restrain Lindsay and Harmon from manufacturing or permitting others to manufacture the axles.

PROMINENT TRADESMAN KILLED

Cleveland, O., April 17—W. S. Gordon, secretary and general manager of the Standard Welding Co. of this city, was accidentally killed today in his motor car returning from a lunch at the crossing near his factory by a Lake Shore train. Mr. Gordon leaves a wife and four children. He was 52 years old and was very prominent in the industry for the last 12 years.

Although Pioneer in Taxicab Service

Competition With Horse Cabs Compels Companies To Make Very Low Rates—Fuel Is More Costly Than in America, and Good Drivers Are Hard To Find in French Metropolis

PARIS, March 24—Although Paris had the advantage of being the first city in the world to organize motor taxicab service, the early start has not enabled it to maintain a premier position in this class of public transportation. There are several vital reasons why the taxicab service of Paris never can be equal to that of some other cities in Europe and America: It is necessary to work at very low rates in order to compete with horse cabs; fuel is more costly in Paris than in any other city in the world; since the first novelty of the motor taxicab passed away, with its consequent high charges, it has been impossible to obtain good drivers. An additional factor against the taxicab companies is the comparatively hilly nature of the city, the bad condition of all the road surfaces with the exception of a few fashionable avenues, and the frequency of accidents owing to congested traffic and bad policing.

Horse Is Doomed

Despite the very adverse conditions under which all taxicab companies have to operate in Paris, the horse is doomed for this class of work. Two of the largest horse cab companies have disposed of three-quarters of their horse vehicles and are replacing the others by motor cabs as the horses become unfit for service. The horse



OUTSIDE THE COMPAGNIE FRANCAISE GARAGE AT LEVALLOIS, NEAR PARIS. DRIVERS BUY THEIR BENZOL FROM VARIOUS DEALERS IN THE NEIGHBORHOOD AS SOON AS THEY LEAVE THE GARAGE

cab is merely lingering to its end, statistics showing that no cab horses are being bought and that no more horse cabs are being built.

System in Operation

At the present time there probably are rather more than 5,000 motor taxicabs in service in Paris, and 6,000 to 7,000 horse cabs. These serve a population of about 3,900,000 in a city having an area of 184 square miles. The traveling capacity of a motor cab being so much greater than that of a horse cab, not fewer than three of the latter have to disappear to make room for one of the former.

With very rare exceptions the Paris taxicab companies work on the system of one-driver-one-cab, the vehicle being on the streets from 6 to 12 hours per day and remaining idle the rest of the time. An average working day lasts 10 hours.

With a view to increased receipts, most of the companies have experimented with the system of two or three shifts of men, allowing the cab to be run for 24 hours a day. They now are convinced that such a system is ruinous. So strongly are the companies opposed to it that they refuse to let the cabs run all day even at such periods as Christmas and the national fete of July 14, when travelers are to be found at all hours. The drivers, inclined to be careless at all times, are absolutely reckless when driving a cab taken over from another man. It has been proved over and over again that after 48 consecutive hours on the streets a cab has to spend 2 days in the repair shop, and nobody will accept the responsibility for the damage it has suffered.

Liberty Given Drivers

In Paris a considerable amount of liberty is allowed the drivers regarding the time they shall leave the depot and the number of hours they shall remain on the streets. All the companies stipulate that the cab shall show a certain average income, this average varying with the class of cab—for there are three distinct sets of fares in vogue in Paris—and with the season. Thus, the average must be higher in winter and during the height of the society season of May and June than it is at the end of August. It matters little to the taxicab company whether the driver spends 6 or 12 hours in making his average; as soon as he has made it and returned to the garage the cab is not taken out again until the next day. If any driver persistently fails to make his average his services are dispensed with.

In nearly every case it is stipulated that the cab shall have left the garage not later than noon; a few companies fix the hour at 11 a. m. If the driver has not taken his cab out at this hour it is turned over to one of the reserve men. There is absolute liberty as to the districts in which



MORNING SCENE AT PLACE COLLANGE, LEVALLOIS, IN SUBURBS OF PARIS, NEAR COMPAGNIE FRANCAISE GARAGE. THE APARTMENT HOUSE SHOWN IN THE ILLUSTRATION IS INHABITED EXCLUSIVELY BY TAXICAB DRIVERS

Paris Finds Weak Points in System



TAXICAB DRIVERS BUYING BENZOL JUST OUTSIDE THE CITY OF PARIS. A SUPPLY IS FOUND IN CANS, WHICH ARE IN TURN PACKED IN THE BIG BOXES

the cabs shall operate, none being rigidly attached to various hotels, theaters or railroad depots. Paris being essentially a city of varying pleasures any attempt to rigidly attach cabs to one district would be foredoomed to failure. The drivers can be relied on to know the attractions of the day.

No Fixed Salaries

No Paris taxicab company now pays a fixed salary to its drivers. In practically every case the method is to give a percentage on the revenue, beginning at about 25 per cent and increasing to 40 per cent. As an example, one company operating two-cylinder Renault cabs gives its drivers 28½ per cent on all receipts up to \$6. From \$6 to \$8 the driver receives 32½ per cent; on sums from \$8 to \$10 the percentage for the driver is 36½; above \$10 the driver receives 38 per cent. The company provides the cab, together with tires and lubricating oil, and in most cases a rented uniform for the driver, while the latter has to buy his own fuel. In addition to his percentage each driver is entitled to all the tips he receives, and in most cases he considers it his duty to dodge the taximeter and cheat his company as much as possible. Knowing that cheating is carried on to a very large degree, some of the largest companies, such as the Compagnie Francais, employing nearly 3,000 Renaults, engage a large staff of plain clothes inspectors to look out for drivers carrying passengers with the flag up, and indulging in other practices prejudicial to the company. Undoubtedly the smaller companies, unable to maintain large staffs of inspectors, suffer severely at the hands of dishonest drivers.

Much Benzol is Used

The cost of fuel being high in France, and particularly high within the city of Paris, owing to the town duty, nearly all cabs use benzol in place of gasoline. In a few cases it is purchased in bulk by the operating company and sold at cost price

to their drivers, the price being 25 cents per gallon outside Paris, and 36 cents in the city with the duty paid. Most of the companies, however, refuse to handle fuel for their men, and the latter purchase retail each day from various dealers in the neighborhood of the garages. Benzol is practically forced on the companies by their drivers, the latter refusing to use gasoline on account of its high cost, from 58 to 60 cents per gallon in Paris. Although benzol is satisfactory as a power producer and can be used with any ordinary carbureter by slightly raising the level in the float chamber, it is not favored by the companies on account of its destructive effect on valves and valve seatings. In this matter there is no alternative: the companies have either to submit to the use of benzol or see their cabs stand idle. It is the high cost of fuel which is responsible for the use of the single and two-cylinder cab in

Average Working Day Is Ten Hours, and Companies Operate on the One-Driver-One-Cab Idea—Men Get Percentage of Receipts in Return for Their Labor—Tires Bought Outright

Paris. Probably not more than 10 per cent of the taxicabs have four-cylinder motors; it may be roughly estimated that 70 per cent of the cabs have twin-cylinders—Renault, Unic, Charron, Bayard-Clement, Delahaye, Panhard—that 20 per cent have single-cylinder motors—de Dion Bouton—and 10 per cent have four cylinders—Delahaye, de Dion, Bayard-Clement.

Buy Tires Outright

It is now customary for the Paris taxicab companies to purchase tires outright. Indeed, there is no alternative, for the last company supplying on a mileage basis, after raising its price from 2 2-5 cents per mile to 5 cents per mile, 30 by 3½-inch tires, has refused to continue on a maintenance basis. Michelin always has refused to sell on a mileage basis, and others having tested the system have experienced so much cheating on the part of drivers and so much difficulty in maintaining a control, that they have abandoned it. A few tire companies give a guarantee of 3,000 to 3,700 miles, but the majority sell without any conditions attached. One company using single-cylinder de Dions gives the average life of 30 by 3½ tires as 3,700 miles on front wheels, and 1,900 miles on rear wheels. The tendency now is to adopt very large size tires, sections of 3½ inches



A DE DION TAXICAB GARAGE. FOUR-CYLINDER MODELS ONLY ARE EMPLOYED HERE, THE CABS BEING OF A HIGHER GRADE THAN THOSE USUALLY SEEN IN PARIS

being replaced by 4 or 5-inch sizes. Opinions are divided as to the value of tire repairs, but in the majority of cases it is thought most economical to run the tire to destruction, without seeking to lengthen its life by retreading or patching, except in the case of a severe cut to an almost new shoe.

All companies are strongly opposed to their drivers tinkering with the mechanism. They are allowed to clean fouled spark plugs, but for anything more serious they must telephone to the garage. To prevent meddling the cars are generally totally unprovided with tools. The restriction is certainly a wise one, for in the great majority of cases the drivers have not even an elementary knowledge of the mechanism put in their charge; this cannot be wondered at when it is remembered that the men are recruited from all professions, and that many of them are ex-horse cab drivers. Each garage maintains a distinct repair staff, generally working on a day shift only, for the cabs that come in early can be examined in the evening, and those that return late can be looked at before they go out next morning.

Examine the Cabs

It is customary to give each man a road book in which he notes any feature requiring attention. The daily examination is generally of a summary nature, not averaging more than 10 minutes per car. Most of the larger companies overhaul each chassis every 6 months, but the smaller concerns believe they can make economies by only overhauling when a cab begins to show visible signs of wear. Many of the more satisfactory types of cabs are found to run more than a year without attention, while others cannot exceed 6 months without needing heavy repairs.

Before a cab can be put into operation in Paris, it must first of all be passed by the Service des Mines, in the same way as any touring car. This is now but a formality, for all modern cars have attained a higher standard than that required by the government. In addition the cabs must undergo a police examination, in order to see that their registration tags are in order, that they carry numbered lamps, that the color of the taximeter flag corresponds with the tariff they are working under, etc. This examination is repeated every 6 months. In addition to the ordinary certificate issued by the Service des Mines, and obligatory on all operators of motor vehicles, taxicab drivers must hold a special police license similar to that issued to horse cab drivers. This, however, is merely a registration, in order that the police may have more efficient control of the men.

City Will Not Guarantee

Although having the power to do so, the Paris authorities refuse to say when a cab is unfit for service. The view appears to be held that did they make a critical examination and give an efficiency certificate the cab companies would endeavor to shoulder the responsibility of any accident

In the Realm of the



ALDEN SAMPSON TRUCK THAT MADE ILLINOIS DEMONSTRATION

onto the city authorities. As the inspectors have guaranteed nothing, they cannot be held in any way responsible if an accident occurs. It is up to the public to say if a cab is clean enough, smart enough and safe enough to travel in.

One of the most striking differences between taxicab service in Paris and London is in connection with the police examination. Scotland Yard has the right to say whether a chassis is fit or not to be put on the streets of London. And the examination is not a mere formality, as in Paris, as is shown by the fact that many a chassis considered ideal for the French capital has been turned down by the English authorities for such defects as inability to turn in the required radius, defective brakes, carburetor too near the magneto, etc. The police, indeed, pose as motor experts, and although engineers may consider some of their restrictions ridiculous, they have to submit to them. When one car of any type has been passed, all duplicates are accepted without demur. In addition there is a most rigorous annual examination of both bodywork and chassis; and so exacting are the authorities that it is necessary to make a complete overhaul once a year. It is frequently necessary to renew gears long before they are really worn out, owing to the refusal of the authorities to pass them if they have become noisy.

Unlike Paris, London has a decided preference for four-cylinder cabs. There are no single-cylinders in use, and although the Renault twin-cylinders have proved a complete success, they are outnumbered by the various four-cylinder models. The use of a four is made possible by the higher rate of fares compared with Paris, 16 cents per mile, and the lower price of

gasoline, the average price to the drivers being 19 cents per gallon. Fuel is obtained from the operating company, and in some cases, when the garage is a considerable distance from the city, 1 gallon is allowed for the out and home journey.

London Uses Percentage Basis

The payment in London is always on a percentage basis, the men receiving 25

HINTS FOR DRIVERS

A 5-ton truck never should be run at a speed to exceed 10 miles per hour. It will be much longer-lived if the maximum speed is limited to 8 miles per hour. No driver should be allowed to race his engine idle. This causes more damage in a few minutes, by setting up excessive vibration, than is caused by a day's hard work under normal conditions. Vibration causes nuts to work loose and also causes crystallization.

No driver should start his load from a stand-still by jamming in the low-speed clutch. This puts a terrific strain on the frame, gears, keys, sprockets, chain, a twisting strain on the shafting, and sooner or later something will give way. Much trouble will be avoided if the operator gradually engages the clutch until he feels the car moving. Then it can be set without damage. This also applies in a greater degree to engaging the high-speed.

When necessary to slow up the car, or bring it to a stop, the easy engagement of the foot brake will also prevent many costly repairs, for when a brake is set suddenly the strain is excessively severe on the differential gears, keys, pins and all connections, as the entire combined weight of the truck and its load is suddenly thrown against all those parts located to the rear of the brake which take the strain.

Commercial Car



MISHAP A TEST OF PIERCE-ARROW CONSTRUCTION

per cent of the total earnings, keeping all tips, and appropriating as many of the extras as possible—and they are all possible if they are not rung up on the taximeter. In London the motor cab had the advantage of being the first public vehicle to make use of the taximeter, horse cabs still adhering to the old, unsatisfactory system of payment according to the driver's fancy. In Paris, on the other hand,

the taximeter had become general on horse cabs before the motor cab made its appearance.

A very severe topographical examination has always been imposed on London motor cab drivers, whereas in Paris a mere stranger is allowed to take the wheel. This examination has naturally had the effect of causing a shortage in the supply of drivers, and it is owing to this shortage that it never has been possible to experiment with the system of two shifts of men per cab. The number of hours on the streets varies from 8 to 24, depending on luck, the inclination of the driver and various other causes; generally, however, the men remain on duty 14 hours per day. The severe regulation, the respect almost amounting to veneration which drivers possess for the police, the British cult of respectability and orderliness all tend to make the taxicabs of London slower, cleaner, smarter and less liable to street accidents than those of Paris.

Some English Rules

The British capital has similar rules to those of the French metropolis regarding tinkering by drivers. The rule in London is to make a complete overhaul every year, the repairs comprising both chassis and coachwork. With a view to keeping down expenses, many of the large companies have found it possible to carry out daily adjustments by a day staff only, commencing work at 6 a. m. Formerly a night staff was employed.

Probably owing to the fact that the police make reckless driving impossible, London taxicab companies are able to obtain their tires on a mileage basis, the price varying from 2.8 cents to 2.2 cents, with an average of 2.4 cents for all tire costs, exclusive of labor. The firms pur-

chasing tires outright are in the minority. Benzol is not used as fuel in London, and so long as gasoline rates remain as at present it has no chance of being adopted; indeed, at the present time benzol is only procured with some difficulty.

TRUCK STOOD THE STRAIN

As practical proof of stanchness of construction, the recent dilemma into which a Pierce-Arrow 5-ton truck got is interesting. On a test trip the truck slipped into a ditch so that the whole weight rested on the right front wheel and rear left wheel. The truck was left in that position all night. The next morning, with the aid of jacks, the truck and its load were soon placed back on the road, started, and run back to the factory without a repair having been necessary. At the factory a thorough examination was made to see if there had been any permanent set to the pressed steel frame from the long-continued strain, and there it was found that absolutely no damage had been done. As a proof of this the truck was shipped a few days later to another section of the country, where some tests of hill-climbing power were made on severe grades.

SAMPSON ON CROSS-COUNTRY RUN

From Rock Island, Ill., to Chicago over a 200-mile route is the trip just completed by a Sampson 4-ton truck in charge of W. B. Ingwerson, supervisor of sales for the United Motor-Chicago Co.

The start was made from Rock Island, Ill., March 30, at 10:40 a. m. The first stop was made at Moline, Ill., and from there the route taken was in a southeasterly direction, through Orion, Osco and Cambridge to Kewanee. Between Cambridge and Kewanee, while climbing a steep hill and while allowing a team to pass, the wheels of the truck became embedded in sand which ordinarily would have meant a long and serious delay, but by applying the differential interlocking device the machine was able to get out of the sand on its own power with ease.

The interlocking device referred to enables the operator to put the full power of the engine to the wheel which has good traction, where ordinarily, should the driving wheel encounter soft or slippery ground whereby its traction would be lost and the machine would be delayed until other means were resorted to secure the proper traction.

After demonstrating the truck to a number of merchants in Kewanee the journey was resumed on Friday via Neponset, Buda, Princeton and Seatonville to Peru and La Salle. From La Salle a northerly route was taken, arriving at Earlville at 7 p. m. The entire population of Earlville was on the main street to receive the truck. Leaving Earlville Saturday morning, passing through Leeland, Somonauk, Plano, Bristol and Montgomery, Aurora was reached by 10:30 a. m., where a stop of 1½ hours was made.

COMPILED BY MORGAN CO.

Attention to lubrication will add incalculable life to the bearings. Chains should be kept clean, well lubricated and always in line; otherwise they wear out very quickly. We suggest removing the chains about once in 300 miles, washing them in kerosene and boiling in a solution of tallow and graphite. This fills the chain bearings with hard lubricant, keeps out dust and grit, and will add many miles to the life of the chains.

Should the front axles or the cross steering arm become bent by collision with a curb or otherwise, the wheels would have a tendency to run at an angle to each other, causing the rubber tire to be scraped off. This must be corrected as soon as discovered. The tire will last when the wheel rolls, but when the wheel slides the rubber is quickly worn away.

The proper adjustment of all bearings is absolutely essential if the best work is to be obtained from the car. Properly lubricated, they require very little taking up, but neglect of the oil and grease cups will soon show a worn-out machine. Oil costs less than bearings.

Of all things, proper lubrication, which means good lubrication used freely and regularly, is the most essential thing in the successful and economical operation of any machinery and especially that of a motor car.

COMMUTATOR CAUSES MISSING

JERSEY CITY, N. J.—Editor Motor Age—I have been noticing an irregular misfire which has been growing continually worse. The motor fires nicely on low speeds, but when the car approaches a speed of 15 miles an hour the missing commences and the tendency becomes greater as the speed increases. I know the batteries, coils and wiring are all right and am positive the fault does not lie with the carbureter. A friend suggests that it might be the commutator. Will Motor Age tell me if this is possible?—G. W. G.

Your friend is probably right if the trouble cannot be ascribed to the other parts of the ignition system or to the carbureter. If you will remove and clean the commutator you will probably find that a depression A, Fig. 2, has been worn into the face of the fiber, on which the roller R of the revolving segment travels just in front of each stationary metal segment C. The result of this condition is that whenever high speed is attempted, the roller, on striking the further end of the depression, would tend to jump the greater part of the contact, as designated by the course of the dotted lines B, thereby causing a weak spark or no spark at all in the cylinder. Generally when a commutator has been in service long enough to become worn as described above, the roller and pin of the revolving segment will also be found in bad shape. To repair a timer in this condition it is necessary to turn it down in the lathe, and a replacement is usually the most practical solution.

SPARK PLUG CORES

Lindsborg, Kan.—Editor Motor Age—In assembling the mica for the core of a spark plug, what pressure is considered necessary to produce the very best article? What is the best insulating solution for saturating the mica cores?—P. E. Z.

Motor Age has no data relative to the amount of pressure required to make the most efficient mica core. As for insulating solution for saturating the mica cores, it



The Readers'

is not customary to saturate mica cores; the mica washers simply are assembled onto the central electrode with a mica tube between their inner edges and the metal of the electrode; then they are compressed, generally in a small hand screw press, turned down in a lathe, ground, and polished to give them a smooth finish, and in some cases lacquered.

SPRINGS IN OKLAHOMA

Oklahoma City, Okla.—Editor Motor Age—Some of the old liverymen are equipping their cars with springs as shown in an accompanying illustration, claiming that after several years of use of such springs that they are the only kind that insure comfortable riding over rough country roads, and also prolong the life of the tires and the car. I recently saw a new and expensive car so equipped at the owner's expense. The illustration, Fig. 1, shows the idea of road shocks. I believe this is the proper idea, as the cars so equipped ride like Pullmans, while the ordinary semi-elliptic and three-quarter springs soon tire one out. I would be pleased to have the opinion of Motor Age on the matter. I believe that the small car so equipped will satisfy all this locality, especially if moderate in price.—Reader.

The idea seems a meritorious one and worthy of consideration, especially if there be truth in the claim that the design has been found advantageous after several years of use. Of course at low speeds and on smooth roads the lines of force would be in the direction of line A and there would be a constant shearing strain on the central bolt that binds the spring leaves together; but means undoubtedly could be provided to render the springs capable of withstanding such strains. It is obvious that as the size of an obstruction or the speed of the vehicle increased, the lines of force would swing into the direction in-

EDITOR'S NOTE—To the Readers of the Clearing House Columns: Motor Age insists on having bona fide signatures to all communications published in this department. It has been discovered that the proper signature has not been given on many communications, and Motor Age will not publish such communications, and will take steps to hunt down the offenders of this rule if it is violated.

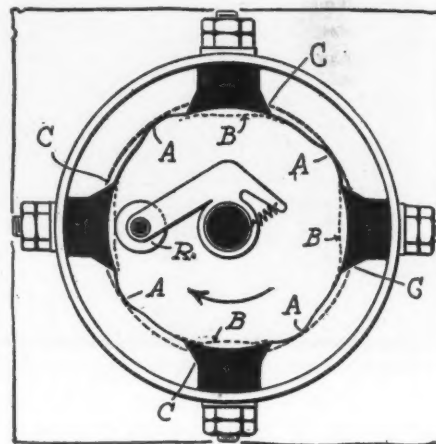


FIG. 2—SHOWING WEAR OF COMMUTATOR

indicated by the line B; and as the spring is designed to be most efficient in absorbing shocks in this direction, it is reasonable to believe that the idea is good, and that a vehicle with its springs so arranged should be better adapted for use on rough roads.

GRAPHITE AS A LUBRICANT

Kenosha, Wis.—Editor Motor Age—Through the Readers' Clearing House will Motor Age state what objection there would be to using graphite in the gearcase of a motor car to lubricate the gears, and would there be any trouble if some should get into the crankcase and mix with the splash oil of the connecting rods?—A. D. Hill.

There is no objection to using a mixture of graphite and oil or grease for lubricating the gears. In fact, if the correct proportion of graphite is used it will result in better lubrication and more silent running. The best mixture to use is about 4 percent by weight of graphite. No harm will come from graphite in the crankcase, for the same proportions of oil and graphite are often used there with very good results.

Manito, Ill.—Editor Motor Age—Through the Readers' Clearing House will Motor Age kindly tell me if it would be practical to clean the transmission case entirely of grease in any make of car and fill with dry graphite as a lubricant? What effect would it have on the life of the transmission gears? Would it have a tendency to make the gears run more quietly?—D. E. Crum.

It would not be good policy to use dry

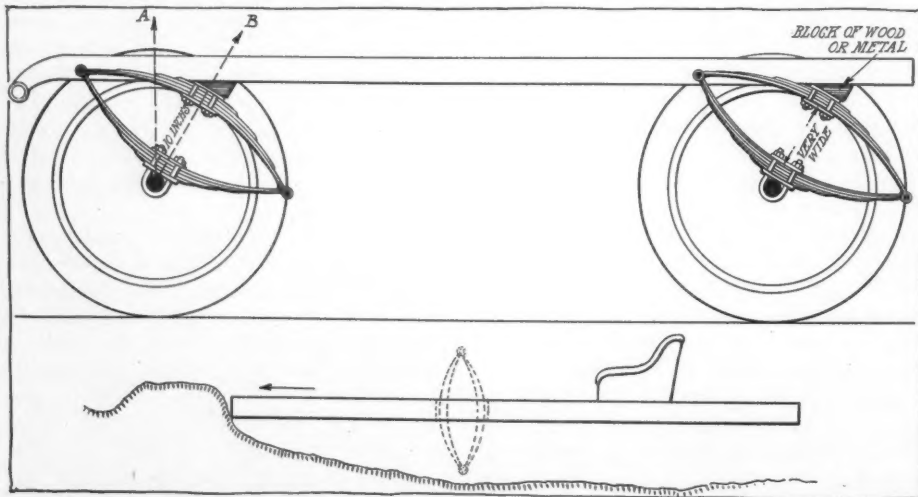


FIG. 1—SLANTED SPRINGS FOR USE ON ROUGH ROADS. A, DIRECTION OF SHOCK ON SLOW SPEEDS AND SMOOTH ROADS; B, DIRECTION OF SHOCK AT HIGH SPEED AND ROUGH ROADS

Clearing House

EDITOR'S NOTE—In this department Motor Age answers free of charge questions regarding motor problems, and invites the discussion of pertinent subjects. Correspondence is solicited from subscribers and others. All communications must be properly signed, and should the writer not wish his name to appear, he may use any nom de plume desired.

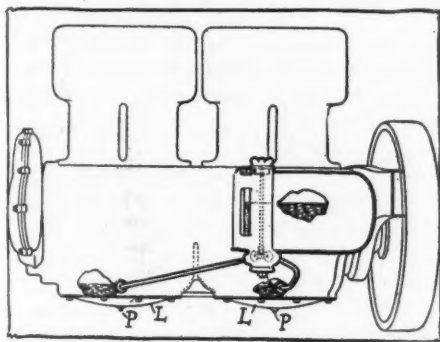


FIG. 3—TO DRAIN E-M-F CRANKCASE

graphite as a lubricant for the gears, but if about 4 percent of the material is mixed with the oil or grease its lubricating qualities will be improved. It also will result in the gears running more quietly.

Sylvania, Ga.—Editor Motor Age—Kindly state in the Readers' Clearing House whether it is better to use a mixture of graphite grease and 600-W oil, or a mixture of plain grease and 600-W oil in the transmission, differential and the roller bearings in the rear axle of an Oakland 30.—A Reader.

A mixture of graphite and the oil in the proportions of 4 parts of the graphite by weight to 96 parts of the oil will probably give the better service in the gearcase, differential and roller bearings of the rear axle.

STOPPING A CAR ON ICE

Waukegan, Ill.—Editor Motor Age—Kindly let me know through the Clearing House columns the best way to slow down or stop a car on ice. I applied the transmission brake to slow down for a corner recently and whirled around nearly two full turns, banging the curb with the rear wheel, but not hard enough to break anything. It occurred to me afterwards that I might have put my foot on the reverse, opened up the throttle and spun the wheels backward. Would it be advisable to do this on a slippery pavement? My car is a 1910 Buick model 10.

What are the holes around the rim of the clutch housing for? I have never put anything into these holes during the time I have run the car, which is about 1,000 miles. This past week, while running on high, I was unable to release the clutch and stopped by turning the switch. Had I been wise I would have kept on going and made for home. However, I stopped

and tried to fix it, but gave up the job and got back home via horse and buggy. Next day we went out with a garage crew to tow it in, but before hooking onto it we took an iron bar and sledge, and with a few good raps near the center released it, coming home fine and dandy alone.—E. G. Alden.

The only right way to stop a car on the ice or a slippery pavement is by a careful application of the brake, just hard enough so that the wheels are not locked. Your trouble in the instance referred to was probably due to applying the brake hard enough to lock the wheels. They lost traction in this way and the car skidded. More braking effect is obtained by allowing the wheels to revolve slowly than by locking them. Reversing the motor will not only be less effective in stopping the car quickly but will also be hard on the tires, while the shock to the transmission will be detrimental to it.

A sticking clutch can often be released in the way you mention, but the method is not to be recommended till other expedients fail. The holes around the rim of the clutch housing are to let out the oil that runs back along the shaft.

TO DRAIN E-M-F CRANKCASE

Cedar Rapids, Ia.—Editor Motor Age—Through the Readers' Clearing House, will Motor Age suggest a way to drain the oil from the crankcase of a 1910 E-M-F car?—H. L. H.

A drawing of the motor is shown in Fig. 3. The oil may be drained from the crankcase C by removing the plugs P. By taking off the plates L any sediment can be readily removed, and the contents of the case are quite accessible. To remove the plates, of course, it will be plain that the mud pan must be taken down, but the plugs can be removed without going to this trouble. If only the plugs are removed, it would be well to flush out the case thoroughly by pouring into it a quart

or two of kerosene after the oil is drained out. Run the motor for a few seconds, so that the kerosene is well splashed around, then drain it out and refill with the required quantity of fresh oil.

CHARGING BATTERIES

Dowagiac, Mich.—Editor Motor Age—Will Motor Age kindly advise me through the Readers' Clearing House if the wiring I have done as shown on the enclosed diagram is correct?

I have a mercury arc rectifier for charging a Detroit electric car and I wish to charge the ignition battery for a gasoline car at the same time. It will be noted that I have taken the feed wires for the ignition battery off the same connections from which the feed wires for the electric car are run. I had an Apple dynamo with automatic cut-out and voltmeter and thought it would be a good plan to incorporate this feature in this charging outfit, as shown on the diagram. It seems to me that when the electric car battery is being charged at the finishing rate of 14 amperes, if the ignition battery is cut in it should raise the ampere needle on the rectifier switch board to 18 amperes, but it does not do so.

The ignition battery is to be charged at a 4-ampere rate, so I use four 32-candle-power lamps of 109 volts. From all I have been able to read, the voltage at which charging is done cuts no figure with the results, but I cannot understand why, and would like to have it explained. As I understand it, the voltage of the lamps should be about the same as that of the feed current, which in this case is from 70 to 80, as shown on the switchboard voltmeter, but I cannot get lamps of that voltage and I cannot see that this makes any difference except that in this case the lamps never would burn out. Is this correct?

When both the electric car and the ignition battery are connected and being charged, if I throw off the main alternating current feed, the lamps still burn and I presume this shows that the current is flowing from the electric car battery to the ignition battery and it occurred to me that this would be a good way to charge the ignition battery and at the same time

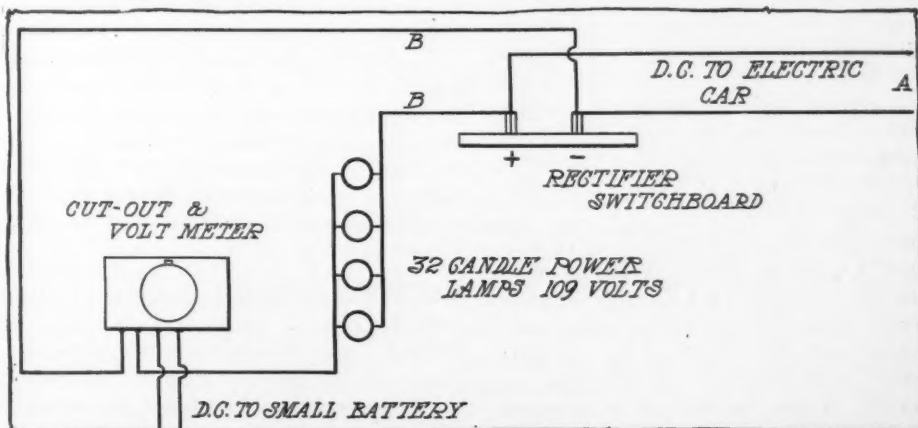


FIG. 4—WITH THIS ARRANGEMENT FOR CHARGING ELECTRIC CAR BATTERIES AND IGNITION BATTERIES AT THE SAME TIME; THE LARGER BATTERY CHARGES THE SMALLER ONE

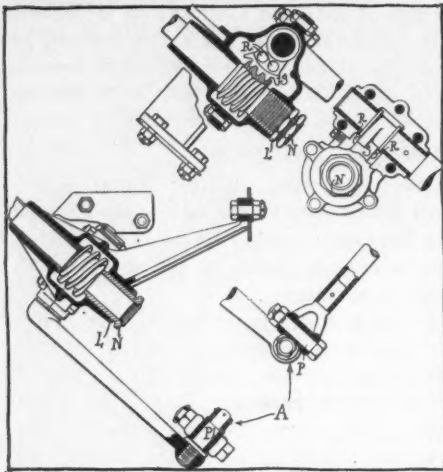


FIG. 5—A COMMON TYPE OF STEERING GEAR

give the car battery something to do while it is lying idle, as I understand it is better for the battery to be occasionally discharged and recharged. Is this correct?

In this case, is the current really flowing from the car battery to the ignition battery or from the ignition battery to the car? It is difficult to obtain information of this nature here, so any help Motor Age can give will be greatly appreciated.—A. B. Gardner.

You seem to have the situation very well in hand; the wiring diagram is correct. As for the automatic cutout a common switch would serve the purpose just as well or better, for the flow of current never can exceed that which is allowed to pass through the lamps. The cutout, to be used in connection with a small dynamo or generator, is designed to stop the flow of current when its amperage exceeds a safe charging limit, or to prevent the battery from discharging back through the current generator when it is not in operation or running very slowly. By installing it in a circuit in which the voltage is constant and always greatly in excess of that of the ignition battery, and in which the lamps always prevent an excess flow of current a cutout of this type is unnecessary and could be advantageously replaced by a simpler switch.

When the electric car battery is being charged at the finishing rate of 14 amperes and the ignition battery cut in, there is no increase of amperage because about 4 amperes goes through the lamps and ignition battery circuit, and but about 10 amperes to the electric car battery; thus the needle on the switchboard of the rectifier does not change its indication.

What you have read relative to the voltage of a charging current having no effect upon the charging of a battery is quite correct except that the proper lamps must be used and the voltage of the charging current must always be greater than the capacity of the battery to be charged. The ignition battery charging circuit might be likened to a bladder full of water, and the number of lamps in the

circuit to a number of pin-holes in the bladder. If a certain quantity of water is maintained in the bladder, four streams of pin-hole size will flow from the bladder at a certain speed; if only three pin-holes are made one-fourth less water will flow; and if five pin-holes are made one-fourth more will flow. If a pin-hole is likened unto a 16-candlepower lamp, two pin-holes would be equal to a 32-candlepower lamp or two 16-candlepower lamps. If, however, the water in the bladder is allowed to run out through the pin-holes and not replaced, the amount of water passing through the holes will gradually decrease, that is, it will not flow so fast; the flow being dependent upon the head or pressure due to the weight of the water. Now if the weight or pressure of the water was likened unto the voltage of an electric current, practically the same would be true of it. A 32-candlepower, 110-volt lamp on a 110-volt circuit will allow 1 ampere of current to flow; but if this lamp is used in a circuit of only 80 volts, the pressure having decreased, the flow or the rate of flow will have decreased also, and the amperage will be lower than 1 ampere. The 109 or 110-volt lamps will last longer in a 70 or 80-volt circuit, but they also do not allow a full 4 amperes of current to flow through the ignition battery circuit.

When the main current feed is cut off, the lamps in the ignition battery circuit are kept burning because, as you suggest, the current is supplied from the electric car battery. The electric car battery has a sufficiently high voltage to light the lamps, but the ignition battery has not. Your idea of discharging the electric car battery a little occasionally to charge the ignition battery is very good.

CEMENT FOR RADIATORS

Winamac, Ind.—Editor Motor Age—In Motor Age some months ago hydraulic cement was advised to fix a leaky honeycomb radiator. I should like to know what this cement is, and where I can buy it, as I have been unable to get any information on it.—C. L. Blinn.

A cement of this kind is made by the Northwestern Chemical Co., Marietta, O., and marketed under the name of Se-mentol. In using preparations of this kind, if the radiator is an old one and rusted inside, or if it contains any sediment, be sure to flush it out beforehand. The way to clean the radiator was described under the title, Housecleaning the Radiator, in the Readers' Clearing House for March 23. Tests are being conducted by the experimental department of Motor Age on the preparation referred to.

ADJUSTING STEERING GEARS

Omaha, Neb.—Editor Motor Age—Through the Readers' Clearing House please tell me how to take up the play in the steering gear. Should the wheel be tight or should there be some play?—C. L. M.

As you did not state the make of your

car the directions given below may not apply exactly to your case, but the two types given are close enough to general practice that the instructions can be followed closely with most makes of steering gears. In Fig. 5 detailed drawings of the E-M-F steering gear are shown. In order to take up the lost motion it will first be necessary to find out where the lost motion is. If it is in the steering connections, the joints of the steering rods at the knuckles and steering arms, etc., one of which is shown at A, it may be that a new pin P will have to be fitted. This might also be the case with the pin Pl. It is also possible that adjustment of the thrust bearings of the steering worm is necessary. This will require that you loosen the lock nut L, tighten up the nut N, both of which are at the lower end of the steering column; the nut N should be drawn up until the steering column begins to turn hard, then loosen just a trifle, so that the steering column will not turn hard and the lock nut L again tightened up. It sometimes happens in remote cases that the rivets, R, loosen up so that there is lost motion between the sector S and the shaft to which the steering arm is attached. To learn whether or not this is the cause of the trouble, disconnect the steering rod which runs from the steering arm to the steering knuckle, from the steering arm, then, while some one holds the steering wheel rigidly, see if there is any lost motion in the steering arm itself by trying to work it back and forth by hand. If these rivets are loose the steering gear should be disassembled at once and new rivets fitted. Other possible but very uncommon causes of lost motion in this feature of the E-M-F cars is that the bushings B are worn; that the bolts which attach the steering gear to the frame are loose, or that the teeth of the sector S itself are worn.

A slightly different type is illustrated in Fig. 6. It is fitted with a brass cap C instead of the two nuts referred to in the previous illustration. To adjust this type of steering mechanism, loosen the clamping stud bolt B and turn up on the

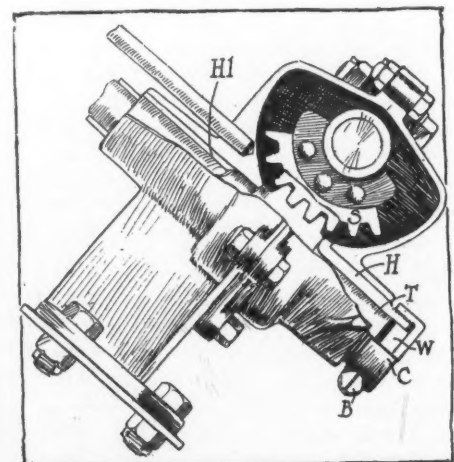


FIG. 6—CONSTRUCTION OF ANOTHER TYPE OF STEERING GEAR

cap C until the thrust washer W is brought into contact with the end of the shaft T; then fasten the stud bolt B again securely. It hardly is possible that the bushings H and H1 are already worn, or that there is lost motion in the gears due to wear of the sector S; but should you be unable to remove the excessive play by means of the adjustment above mentioned and you are sure that the play exists between the steering wheel above and the steering arm below, then it might be well to have the mechanism removed from the chassis, disassembled, thoroughly inspected and all worn parts readjusted or replaced.

There should be no play in any part of the steering mechanism, but it should not be too tight to turn easily.

PROBABLY IGNITION TROUBLE

Newberry, S. C.—Editor Motor Age—Kindly help me out in the following through the Readers' Clearing House: I have a Wayne model H runabout which is giving me trouble, and I believe it is the carbureter or an improper mixture. The motor is a two-cylinder opposed, with the carbureter on the right side. The right-hand cylinder gives no power when it runs, and half the time it does not run at all—that is, there is no impulse given the piston. When the lead wire is disconnected from the spark plug on the left side, the cylinder furthest from the carbureter, the right cylinder runs with full power, but only when there is no sparking in the other side.

I have decided that if I had either a carbureter for each cylinder on a Y-shaped intake manifold, with the carbureter in the apex of the Y, where the stem begins, that the same mixture would be going to each cylinder and consequently each would have the same power. The greater length of intake pipe going to one cylinder than the other gives the gasoline a better chance to become mixed with the air to make a better explosive. Am I correct? I thought for a while that my trouble was in the carbureter, which had a regulating air intake as well as a regulating needle valve, so I bought a new Kingston and it worked no better than the old one so far as this is concerned. I do not feel able to buy a new engine just now and I do not know how to go about buying a second-hand one that would make good. I prefer a four-cylinder motor on account of its easy access when cleaning cylinders. Perhaps Motor Age could help me out in this respect, if the trouble cannot be remedied.—J. A. Medau, M. D.

It would seem from your statement that the trouble is in the ignition system rather than in the carbureter or intake manifold. Since the missing cylinder fires all right when the spark plug is disconnected on the other one it must be receiving the correct mixture, for the same mixture will reach the cylinders

whether ignition is taking place or not. Look for weak batteries. Still, as you suggest, the shape of the intake pipe and the location of the carbureter may not be correct; this, however, is not true if the motor has been known to run properly originally. Motors with manifolds of this type often give excellent service in the summer time, but in cold weather, owing to condensation in the longer branch of the manifold, the further cylinder fires late and consequently seems to miss entirely and does not give the required power impulse. Then, again, as it is the nearest cylinder which is at fault in your case, it is possible that owing to the design of the piping, the momentum of the column of gas in the longer branch may be so great that the furthest cylinder is best supplied and the nearest cylinder starved because of the sharp angle of the branch leading to it.

If your motor has been known to run well with the piping now fitted your trouble is due to late firing of the mixture in the cylinder which seems to give no power impulse. This is due either to faulty ignition caused by too wide a spark gap, improper coil adjustment, a defective coil or timer, or a leak or short-circuit in the wiring of the faulty cylinder; or, to improper carbureter adjustment, poor compression or unsuitable lubrication. The compression in both cylinders should be equal and can be tested by cranking the motor over slowly with the ignition current off. If the resistance is not the same in both cylinders it is most probable that the valves in the weak one need grinding, though it is possible that the cylinder or piston or both are worn, or the rings stuck in their grooves and the gases leak past the piston. Plenty of oil in one cylinder and not enough in the other would cause one cylinder to wear better and hold better compression than the other. Above all, bear in mind that if the motor has ever run well with the design of manifold fitted a change of manifold design is not required. Make a thorough search for the simpler causes of engine trouble.

REAR WHEELS ARE LOOSE

Lancaster, Wis.—Editor Motor Age—Through the Readers' Clearing House, will Motor Age please answer the following questions:

1—How can I prevent my Ford model T timer or commutator from wobbling and not running true? I have had to install several new ones—some would run straight and true for a short time, and then wobble, wear and misfire.

2—What causes a transmission brake to grab and jerk when applied? It is the worst when almost stopped, though it has plenty of oil, and no rough surfaces on band or wheel. I cannot see that it overlaps on the other hand wheels. Will a new lining help? I have only had this lining on the transmission brake for a short time.

3—How can I keep the rear wheels tight and firm on the axles and prevent the breaking of the pins which go through the hub and axle? The flat key seems to wear loose very quickly, leaving too much play of the hub on the axle. I have had suggestions from good authority as how to remedy these troubles, but none of them have been satisfactory.—Subscriber.

1—Your trouble is most probably due to the fact that when you fitted the new commutators you neglected to use a new timing gear locknut. It is advisable to fit a new commutator and a new timing gear locknut and see that they are closely and properly fitted; good service then will be assured.

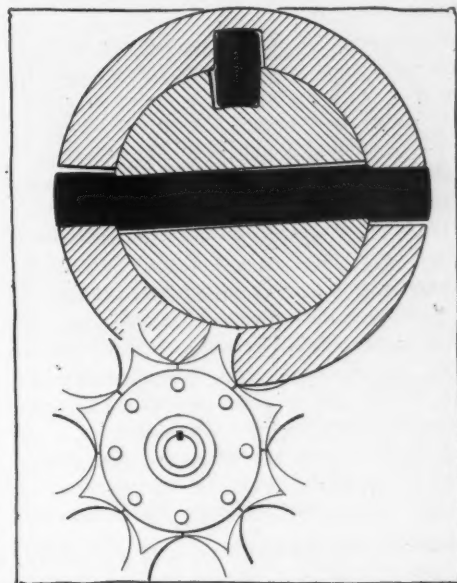


FIG. 7—WHY THE REAR WHEELS ARE LOOSE

2—The grabbing and jerking is due to the hardened, glazed condition of the surface of the lining material. New linings are necessary, and if you will write to the Ford agents in Milwaukee for a new lining or set of linings and state the nature of your trouble, they will send you an improved material which will last longer than that which you are now using.

3—Your wheels come loose on the rear-axle shafts because they are not fitted tightly enough in the first place. The pins passing through the axle are and should be made of soft steel so that they will not crystallize and allow the wheel to come off, but the long, square key should be of a harder steel and closely fitted. If you want the wheel fitted so that it may be removed without the use of a wheel-puller, then the keys and pins will have to be replaced more often; but if you wish a tight and most lasting fit, have a new key closely and properly fitted, and have the pin hole reamed out and a new pin fitted. Fig. 7 shows how the pin and key, with its keyway, become worn. This wearing effect is very much exaggerated in this illustration to emphasize the point. The shoulders formed on both the pin and key are apparent.



Routes and Touring

In this department Motor Age will give information on routes and touring conditions. Suggestions on new or better routes are invited. All communications must be properly signed, as an evidence of good faith, but should the writer not wish his name to appear, he may use any nom de plume desired.

KENTLAND-CHICAGO ROUTE

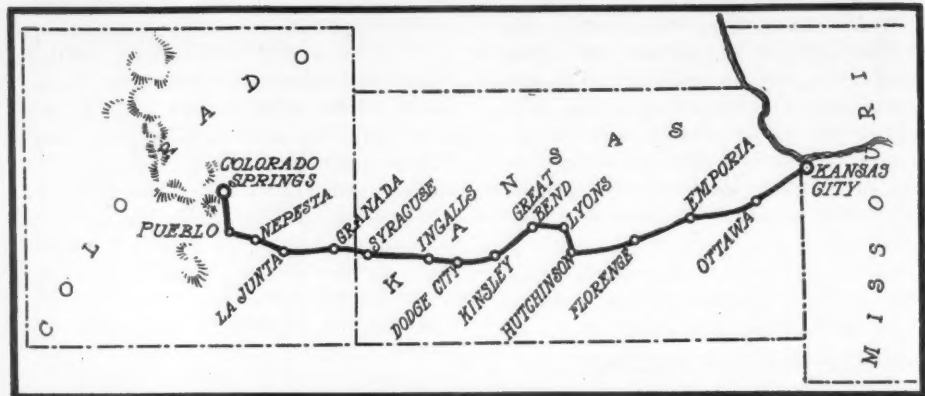
KENTLAND, Ind.—Editor Motor Age—Through the Routes and Touring Information Department will Motor Age give me a route from Kentland, Ind., to Chicago?—D. S. H.

A distance of approximately 98 miles, over good macadam and dirt roads most of the way, with an occasional sandy stretch, the route lies through Morocco, Thayer, Shelby, Crown Point, St. Johns, Dyer, Hammond, South Chicago, Chicago. For mileages, running directions, hotels and garages, you are referred to the Automobile Blue Book.

ROANOKE, VA., TO NEWPORT NEWS

Reading, Pa.—Editor Motor Age—I want to tour from Roanoke, Va., to Newport, via Staunton and Richmond News, and would like a town-to-town itinerary covering these points.—Motorist.

A distance of approximately 90 miles from Roanoke to Staunton over good dirt roads, with stretches of macadam and roll-



THE NEW SANTA FE TRAIL SUGGESTED AS BEST ROUTE THROUGH KANSAS

ing country, going through the towns of Boosac, Cloverdale, Troutville, Buchanan, Natural Bridge, Lexington, Fairfield, Midway, Greenville, Minto Springs, Staunton. The Staunton-Richmond division of the trip, 123 miles, will take you through Brand, Fisherville, Basic City, Spring, Afton, Hillsbury, Meehums, Ivy, Woods Station, University of Virginia, Charlottesville, Shadwell, Keswick Station, Cismont, Cobham Station, Whitlock's, Mechanicsville, Trevillian's, Louisa, Jackson, Locust Creek, Montpelier, Richmond.

The Richmond-Newport News section,

87 miles, passes through Slatersville, Barhamsville, Ewell's Station, Williamsburg, Lee Hall, Warwick, Morrison Station, Newport News. This route has been signboarded by the Richmond Automobile Club, and for specific running directions you are referred to the Automobile Blue Book and to the Motor Touring Routes compiled by the Richmond Automobile Club.

SANTA FE TRAIL PREFERRED

Hutchinson, Kans.—Editor Motor Age—In Motor Age, April 6 issue, page 25, is a suggested route across Kansas which follows the line of the Union Pacific road. It is my understanding that the Touring Club of America has given official sanction to the new Santa Fe trail for the Kansas part of the ocean-to-ocean route. In any event, the line through Olathe, Emporia, Hutchinson, Lyons, Kinsley, Dodge City, Garden City and Syracuse will prove very much better than can be found across the state farther north. The hotel facilities are far superior over this route to those on any line farther north in Kansas. The soil is more on the sandy order so that roads can be improved much quicker after a rain than anything farther north in the state.—L. B. Young.

INDIANAPOLIS TO BOSTON

Mattoon, Ill.—Editor Motor Age—Will Motor Age through the Routes and Touring Information department give me a route and information on same from Indianapolis to Boston, via Cleveland, Buffalo and Albany? I desire information from Albany to Boston direct across Massachusetts. Where can I secure detailed information about the Albany-Boston trip?—H. F. Kendall.

From Indianapolis go north to South Bend, passing through Kirklin, Middlefork, Logansport, Rochester, Plymouth, Lakeville, South Bend. The South Bend-Albany portion of the route is as follows: Mishawaka, Goshen, Ligonier, Kendallville, Bryan, Wanton, Toledo. From Toledo to Cleveland, a good settled summer

Comfortable Cross Country Touring: Florida Motorist Suggests Equipment

VERO, FLA.—Editor Motor Age—The selection of a car for cross-country touring is one of the main things that should be considered in long tours in strange country and over strange roads. Often have I seen a large, heavy car completely bogged in sand and mud and some one had to walk several miles for help. To my mind—and this is borne out by my experience—a smaller and lighter car is easier to *and*, gives less tire trouble and causes less discomfort to its passengers.

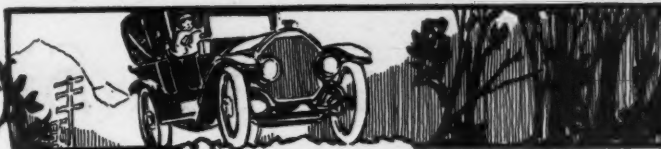
We would not select a new car for a long tour, rather one that had seen proper usage for several thousand miles. It should be given a thorough and careful overhauling; nothing should be taken for granted as being all right—a positive knowledge should be had. All bearings and other parts that show wear should be replaced by new ones; fresh grease in the proper quantities should be supplied to every part; new tires and tubes put on and the old ones left at home to be put on again on return; the top, windshield and speedometer should all be in perfect order, as also the side curtains and lamps.

Now, to the car equipment. See that your jack, tire tools and repair outfit are in good shape; that your tire pump will pump; that you have sufficient tools to handle any nut or bolt about the car; that you have a few nails of mixed sizes, and also several feet of hay wire are handy sometimes, as is also a small hunter's ax with a handle about a foot long. You need a set of tire chains, an extra tube or two and, if your car is very large, some extra casings. The main thing is not to load up with things that you are almost sure you will never need, as they consume power going up hill and through mud.

Now, the passengers. Their clothing should be plain and serviceable—felt hats or caps, sweaters, etc., according to climatic conditions. The great mistake I have so often seen people make is to take too much baggage; it always is in the way, ruffles people's feelings, and my experience teaches me to take along just as little as possible, for much more real enjoyment will result.

In traveling without a route book, be careful of your road information—get it at the garage and don't depend on the farmers you meet along the road to tell you how to get to a place 100 miles away. They hardly ever get 25 miles from where you meet them, and it always is a good plan to have a little diagram made of the road leading out of the city, and especially the towns, as the road quite frequently forks just outside of the town, and it is very easy to get on the wrong road. A spare can of oil always should be in the car and a lunch and quite often a bottle of water comes in handy. Gasoline can be had every few miles in nearly all civilized countries.—N. O. Pemey.

Information



weather route, is via Fremont, Castalia, Sandusky, Huron, Lorain, Cleveland. This will be found an exceedingly delightful run, but is not recommended as the best all-year-round route because of the clay, which makes difficult traveling after rains. In case of bad weather an alternate route would be Toledo, Woodville, Fremont, Clyde, Bellevue, Monroe, Norwalk, Berlinville, Birmingham, Henrietta, Amherst, Elyria, Ridgeville, Dement, Dover and Cleveland. From Cleveland to Buffalo you will have good roads most of the way, but because of the clay the roads are heavy after rains. The towns passed through are Willoughby, Madison, Geneva, Ashtabula, Conneaut, West Springfield, Girard, Erie, Westfield, Freedonia, Irving, Buffalo.

The Buffalo-Albany division of the route is as follows: Buffalo, Williamsville, Clarence, Pembroke, Batavia, Leroy, Canadawana, Scottsville, Rochester, Mendon, Canandaigua, Geneva, Seneca Falls, Cayuga, Auburn, Sennet, Elbridge, Camillus, Syracuse, Fayetteville, Mycenae, Chittenango, Canastota, Oneida, Vernon, Kirkland, New Hartford, Utica, Herkimer, Little Falls, St. Johnsville, Fort Plain, Fonda, Amsterdam, Cranesville, Schenectady, Lisba Kills and Albany.

A direct route over the Taconic mountain to Pittsfield is through Rensselaer, East Greenbush, Schodack, Center, Nassau, West Lebanon, New Lebanon and Shaker Village. From New Lebanon a short side trip can be taken to Lebanon Springs and Hoosic Falls. Into Springfield via Lenox, the heart of the Berkshire country, you will pass through Lee, West Becket, thence over the Jacob's ladder route to Bonnyrigg, Chester, Huntington, Russell, Woronoco, Westfield and West Springfield. Continuing on to Boston, pass through North Wilbraham, Palmer, West Brimfield,

SUGGESTIONS COMING IN

The readers have responded in a very gratifying way to the invitation for touring hints offered two weeks ago, but suggestions from others will be appreciated, and Motor Age will publish one of these each week during the touring season. The hints offered on the opposite page by a motorist in Florida will prove valuable to those who are looking forward to their maiden tour.

With the beginning of the touring season a great many of the readers of this department are looking forward to the first tour through the country districts. An increasing number of trips are taken each year by motorists who have never been outside of their own city in a motor car. The pleasure they anticipate is mingled to a large extent with a fear of mishaps and troubles due to their inexperience.

It is often found on tours that many hardships were encountered that would have been avoided had not some seemingly insignificant detail been omitted where the preparations were being made for the trip. So the troubles of those to whom touring is not an untried field will help the motorist in doubt as to the advisability of touring for him and his family. You, to whom touring in the country is an old story, who have learned through experience what to do and what not to do in getting ready for a trip can assist your fellow motorists wonderfully by what you have learned before.

For your suggestions and experiences in this field of motoring, Motor Age offers the columns of this department. It invites the readers to submit any hints or observations dictated by their experiences or those of their friends.

Warren, Brookfield, Spencer—the home of Elias Howe, the inventor of the sewing machine—Leicester, Worcester, Schrewsbury, Northboro, Marlboro, Wayland, Weston and Boston.

There are many short trips which can be taken to points of interest from this main line and there are also alternate routes into Boston. For instance, there is a northern route from Pittsfield to

Springfield, which can be used in good weather, taking in Hinsdale, Williamsburg, Northampton and Holyoke; on the Springfield-Worcester strip a side trip can be taken to Ware, one to North Brookfield and a more picturesque drive into Springfield is by following the Chicopee river past the falls at Ludlow; another Worcester-Boston route is through North Grafton, Westboro, Ashland, South Framingham, Wellesley Hills, Newton Center and Brooklyn.

The Automobile Blue Book covers this territory thoroughly, giving every possible side trip, mentioning all points of interest and how to get there; what hotels to patronize; running distance from place to place, etc.

SUGGESTS SANTA FE TRAIL

Peabody, Kans.—Editor Motor Age—In Motor Age, issue April 6, 1911, I note that Joseph A. Degenhardt asks for a route from Kansas City, Mo., to Colorado Springs.

Let me suggest to motorists wishing to make this trip that they go via the new Santa Fe trail route. The roads are kept in first-class condition and in many places the culverts are of extra length so as to keep the road grades of good width. Motorists will also find the new Santa Fe trail signboards to guide them along the way. This route, which was used by the Kansas City Star tour in 1910, is as follows: Kansas City, Mo., Martin City, Olathe, Kans.; Gardner, Wellsville, Ottawa, Williamsburg, Agricola, Waverly, Emporia, Plymouth, Cottonwood Falls, Strong City, Florence, Peabody, Newton, Burrton, Halstead, Hutchinson, Nickerson, Sterling, Lyons, Great Bend, Larned, Kinsley, Dodge City, Garden City, Syracuse, Holly, Colo.; Lamar, Las Animas, La Junta, Fowler, Pueblo, Cannon City, Colorado Springs—Ed Jordan, Secretary Automobile Club.

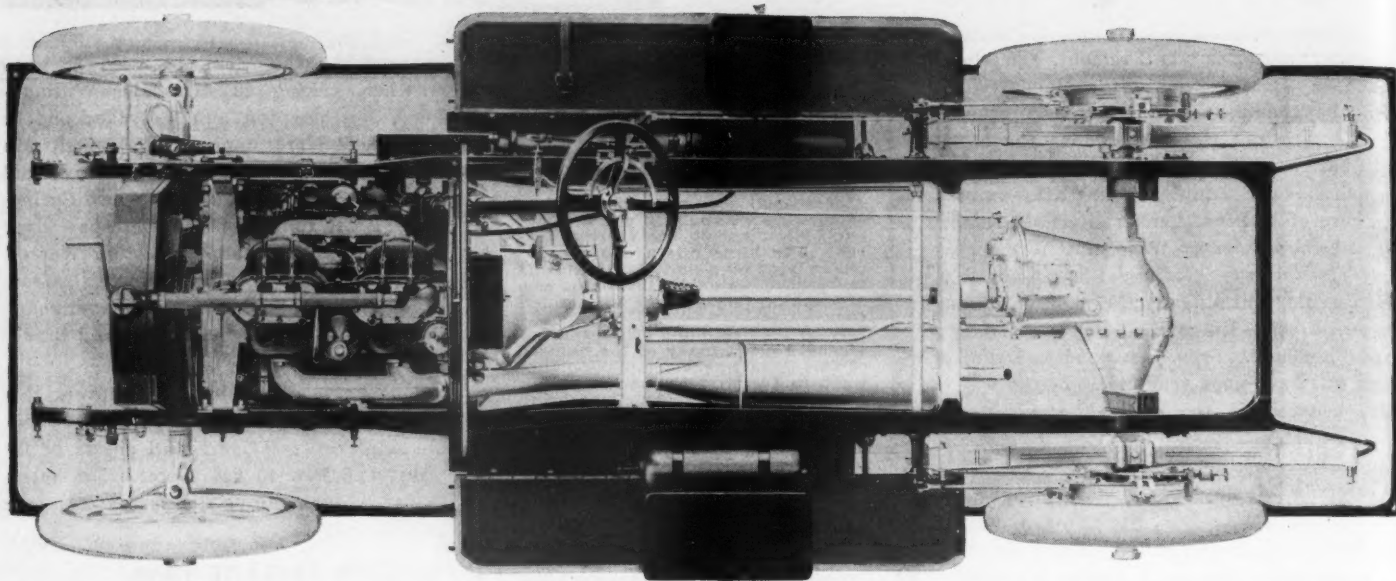


TOURING ROUTES FROM BELOIT TO OUTLYING POINTS
PREPARED BY THE AUTOMOBILE BLUE BOOK



MOTOR ROADS IN AND ABOUT DECATUR
PREPARED BY THE AUTOMOBILE BLUE BOOK

The Four and Six-Cylinder Packard



PACKARD 1912 FOUR-CYLINDER CHASSIS, IN WHICH THE FLYWHEEL AND CLUTCH ARE ENCASED IN AN ALUMINUM CASTING FORMED AS A CONTINUATION OF THE TOP PART OF THE CRANKCASE

Will Build Two Four-Cylinder Models and Has Added a Six-Cylinder One With Motor Leaning Towards the Long-Stroke Design

Fore Doors Standard on All Models That Are Listed

FOR the 1912 season the Packard company will manufacture three models, the Packard 18 and 30 as built this year, and to these have been added a six-cylinder model which will be officially known as the Packard six. This marks the entry of this concern into the six-cylinder field, the company having, up to this time, produced only two four-cylinder models per year. It is stated that the fours will be continued as the leaders, with the six produced in about equal quantities with the present 30 model.

In the four-cylinder models but few changes in the chassis have been made, the major one being a new aluminum casting forming the upper part of the crankcase, which casting is continued rearward in the

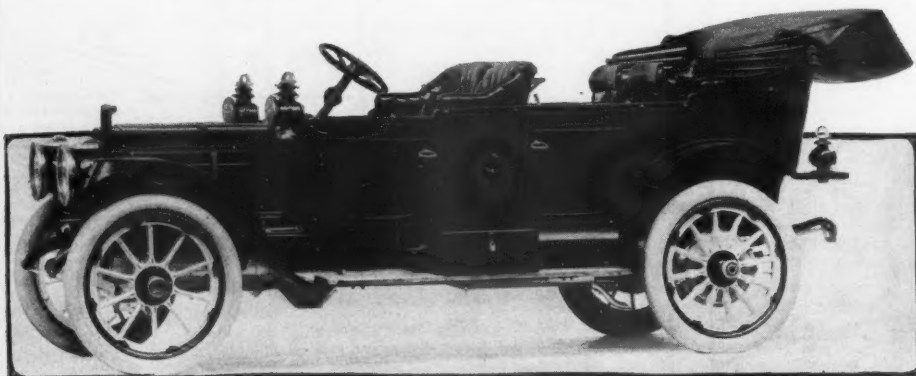
form of two arms circling the flywheel and converging in rear of the clutch, where they form a bearing for the clutchshaft immediately in front of the forward universal joint in the propellershaft. Upper and lower casting are attached to this, as illustrated in the chassis reproduction, thus entirely enclosing the flywheel with its dry-disk clutch.

The new six-cylinder model is a Packard design in practically every respect, but introduces not a few features new in the Packard field. Its cylinders are cast in pairs with opposite valves, being identical in design with those already used on the four and having 4½-inch bore and 5½-inch stroke, these dimensions bringing the motor a little over the borderland into the long-

stroke field. The motor is carried on a three-point suspension, the forward point being a trunnion support beneath an arched cross member which rests on the frame side members. At the rear at each side is a rigid point of support direct on the side member of the frame. The Bosch high-tension dual ignition system is fitted; the carburetor is fitted with a hot-air intake pipe connecting with a sleeve around the exhaust manifold, and the fan is an aluminum casting with hub, blades and rim cast integrally.

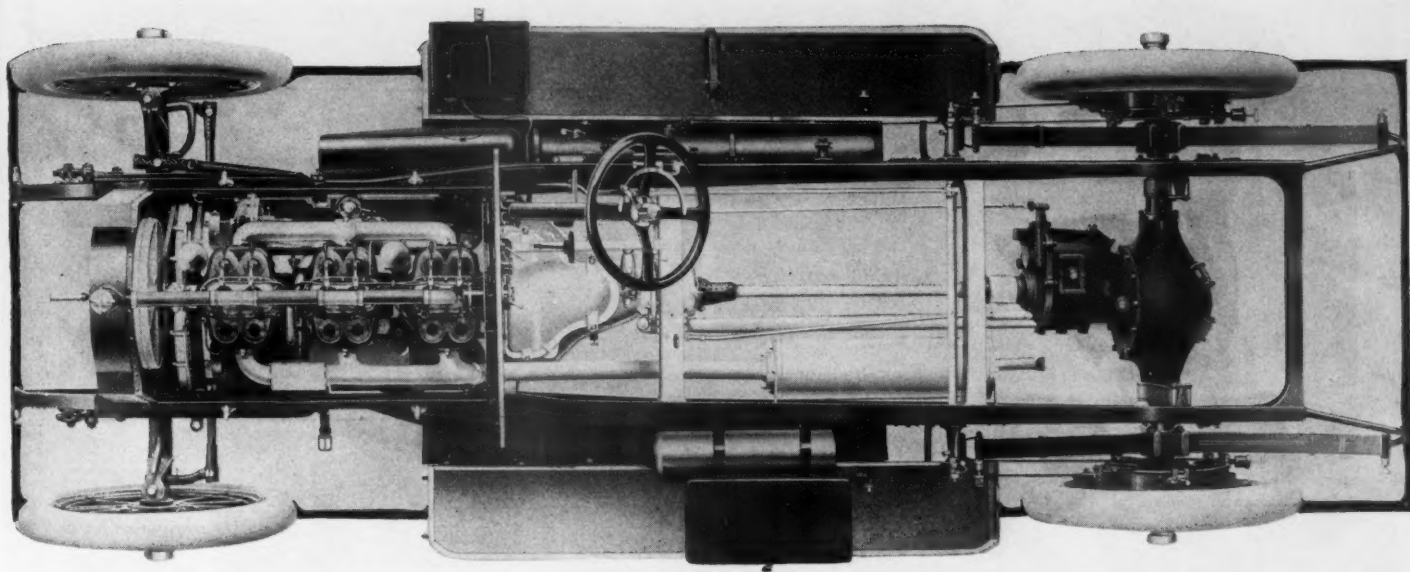
A non-splash circulating oiling system has been fitted. The lower part of the crankcase is a deep oil reservoir with capacity for 1 gallon. In the base of the reservoir is a gear oil pump, which delivers oil to the four bearings of the crankshaft and to the two front bearings of the camshaft and the magneto shaft bearings. The crankshaft is drilled and so oil is led from the main bearings to the six lower bearings of the connecting rods. The overflow from these bearings is thrown in the form of a mist onto the cylinder walls, lubricating them and the piston rings. Each wrist or piston pin is hollow and at this point the side of the piston is recessed so that the oil collected off the cylinder wall flows through the hollow pin into the upper bearing of the connecting rod. On the left rear of the crankcase is a 1½-gallon auxiliary oil tank, which feeds by vacuum into the crankcase, so that the oil level within the crankcase is always kept at a desired level. In this oiling system the lower ends of the connecting rods do not dip into the oil in the crankcase, there being no splash system. At the intake side is an oil level valve controlled by a lever located just in advance of the carburetor.

The crankcase of the motor is made from two aluminum castings, the upper one con-



THE PACKARD 30 FOUR-CYLINDER TOURING CAR FOR 1912, WITH MOTOR HAVING CYLINDERS CAST IN PAIRS, OPPOSITE VALVES, BORE 5 INCHES, STROKE 5½ INCHES, WHEELBASE 123.5 INCHES, FRONT TIRES 36 BY 4½, AND REAR TIRES 37 BY 5 INCHES

Models Made in Many Styles For 1912



PACKARD 1912 SIX-CYLINDER CHASSIS, IN WHICH THE MOTOR IS CARRIED ON A THREE-POINT SUSPENSION, AND INCLUDES A CIRCULATING OILING SYSTEM WITHOUT A SPLASH WITHIN THE CRANKCASE

tinued at the rear to encircle the flywheel, as in the four-cylinder models. By means of upper and lower aluminum plates the flywheel is entirely encased. The clutch pedal is mounted on the casting instead of being on the car frame.

The only change noted in the rear axle is a slightly different method of making the combined gearbox and differential housing. The axle housing is not made in halves, as heretofore, but consists of a one-piece, central, oval-shaped aluminum casting, which contains the differential. This casting has a circular opening facing forward and into this opening is secured the aluminum gearbox, which is consequently a separate unit from the axle housing, so far as construction is concerned but a unit with the axle, the same as used by the company since its inception into the four-cylinder car field. The housing part for the differential is heavily ribbed internally to give a smooth exterior and yet provide adequate strength.

The Packard line of bodies is particularly comprehensive for next season, embracing a complete line of open and closed bodies for the 18, the 30 and the six. The body menu includes the open touring type, the runabout, the close-coupled, the phaeton, the limousine, imperial limousine, landaulet, imperial landaulet, brougham and coupe. These styles may be had in the 30 and six models and the majority of them on the 18 chassis.

As heretofore, the bodies are sheet aluminum built around a wood framework, all of the work being done in the factory, the company having started the manufacture of bodies, for the 1912 season several months ago. Generally speaking, it requires from 100 to 120 days for a body to go from the start to the final finish, a fact which makes it imperative to have the

Three-Point Suspension of the Motor Introduced in Six-Cylinder Chassis, Flywheels Enclosed on All Models, Larger Rear Tires

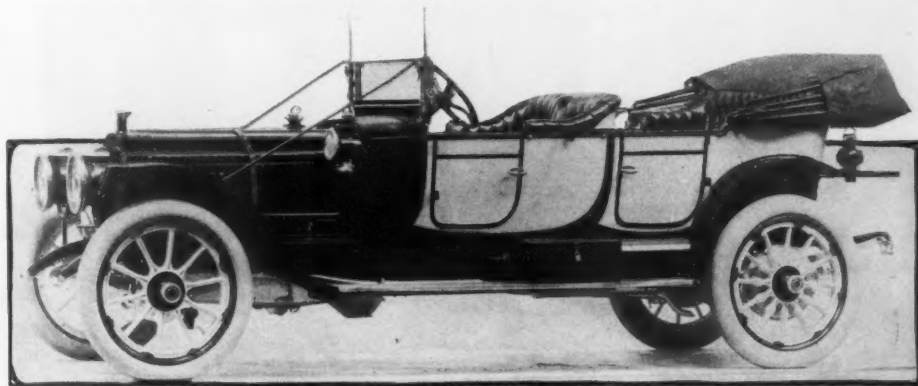
Four-Cylinder Cars Will Be Leaders, Six an Added Model

body department well in advance of other departments.

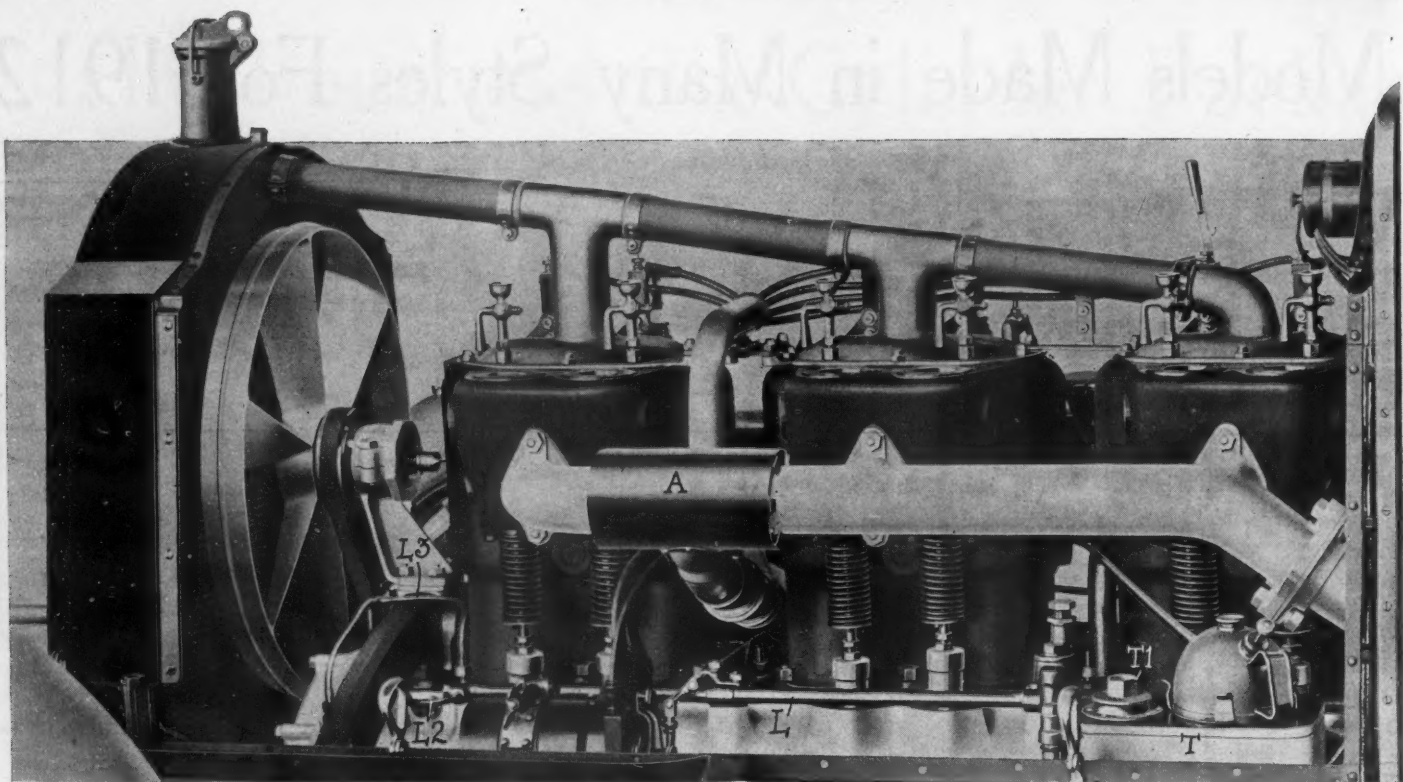
There is very little difference between the 1912 body and the 1911 one. The panel forming the end of the front seat is more tulip-shaped than formerly, being rounded more at the lower forward point of the door, where it has a sweeping curve. All bodies, whether for open or closed cars, are built with foredoors. The roadster and close coupled models conform with this rule, as do all of the limousine and landaulet types. The body list includes a limousine and an imperial limousine. The limousine has a low foredoor with the space above the ends of the driver's seat and over the doors left open. In the imperial design the driver is as much en-

closed as are the rear compartment passengers. This distinction applies also to the landaulet and the imperial landaulet. The single compartment brougham that was shown for the first time at the Madison Garden show has now been added as a regular body model. In this the driver sits in the same compartment with the other passengers. This gives an ideal car where the owner wants to drive, being specially suited for family use. The phaeton models are five-passenger open cars, as compared with the seven-passenger open cars which are known as the regular touring models on the 30 and six.

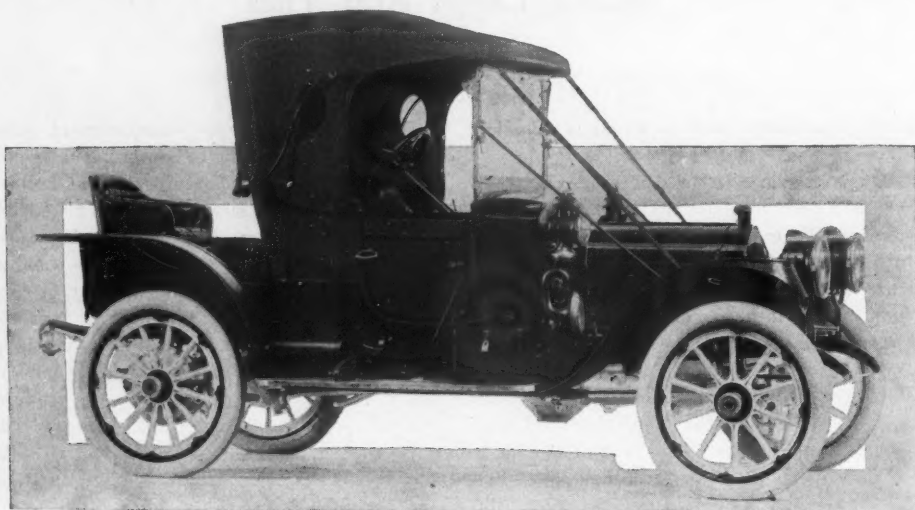
In connection with the bodies the company uses different lengths of wheelbases, there being three lengths on the 30 models,



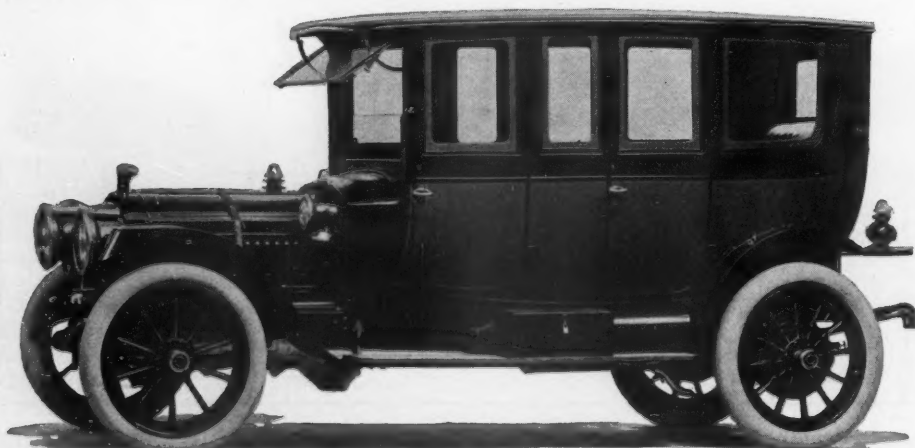
THE PACKARD SIX-CYLINDER PHAETON FOR 1912, WITH MOTOR HAVING CYLINDERS CAST IN PAIRS, OPPOSITE VALVES, BORE $4\frac{1}{2}$ INCHES, STROKE $5\frac{1}{2}$ INCHES, WHEEL-BASE 139 INCHES, FRONT TIRES 36 BY $4\frac{1}{2}$ INCHES, AND REAR TIRES 37 BY 5 INCHES



EXHAUST SIDE OF PACKARD SIX MOTOR, BORE $4\frac{1}{2}$ INCHES, STROKE $5\frac{1}{2}$ INCHES, HORSEPOWER 48; A, HOT-AIR SLEEVE; T, OIL RESERVOIR; T1, COMBINED CAP AND VALVE FOR RESERVOIR; L, MAIN OIL LEAD TO MOTOR BEARINGS; L1, L2 AND L3, BRANCH OIL LEADS TO FRONT BEARINGS OF CAMSHAFT AND MAGNETO SHAFT



1912 PACKARD 18 WITH SPECIAL TOP



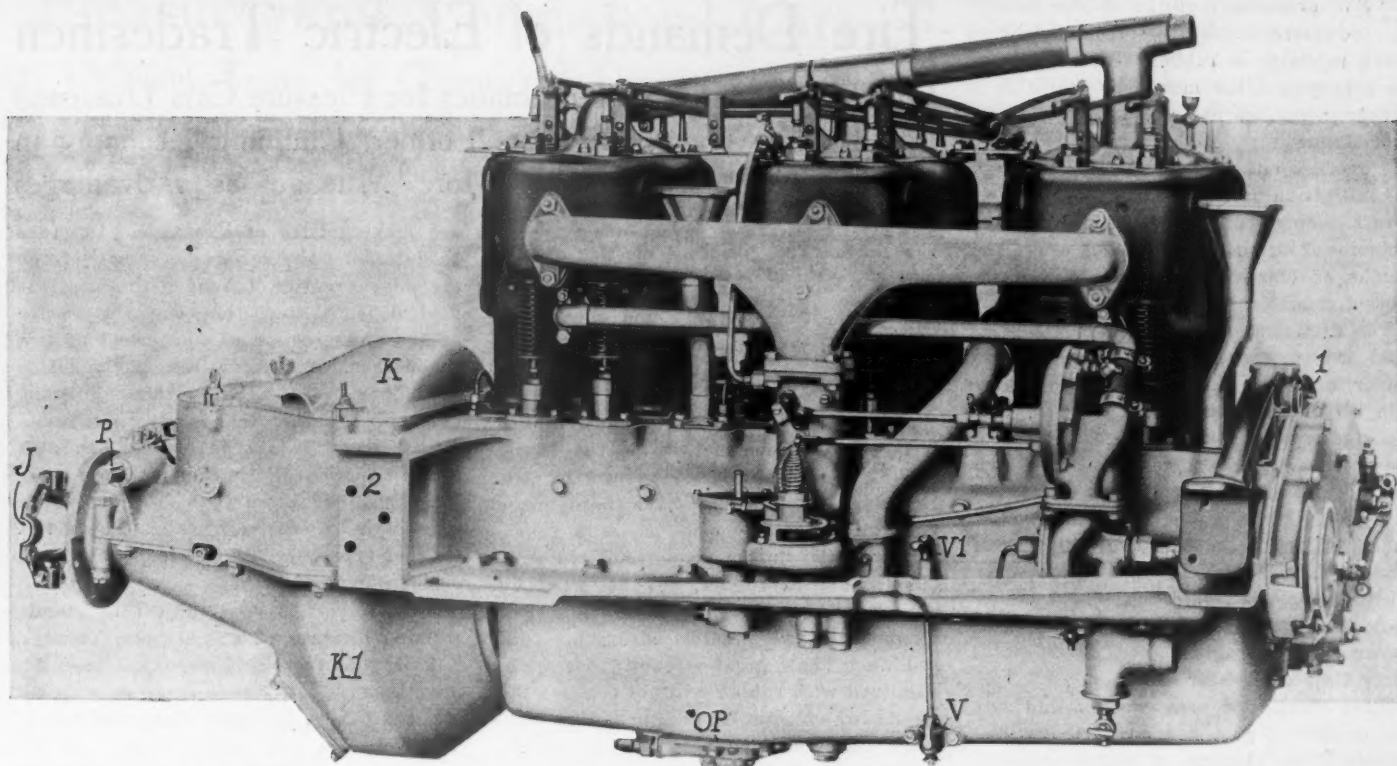
PACKARD 30 BROUGHAM FOR 1912

namely $123\frac{1}{2}$ inches on the standard chassis carrying the touring car, limousine, landaulet, imperial limousine and imperial landaulet bodies; 114 inches on the coupe, and $129\frac{1}{2}$ inches on the brougham. On the 30 and six models rear tires have been increased to 37 by 5 inches, the front measuring 36 by $4\frac{1}{2}$ inches. On the six and 18 models the wheelbases vary along the same lines as in the 30.

Features of the Fours

In the two four-cylinder Packard models, namely, the 30 and 18, the same motor sizes as used for 1911 are continued, namely 5 by $5\frac{1}{2}$ inches bore and stroke in the 30 and $4\frac{1}{8}$ by $5\frac{1}{2}$ inches bore and stroke in the 18. In both of these models the three-part crankcase design, a characteristic Packard feature, is continued. They have the Eisemann low-tension magneto, with stepup coil on dash; the double pump for supplying the oil for splash lubrication in the crankcase, and the standard Packard carburetor with hydraulic control as also used on the Packard six. Water-cooling is by a forced system with a Packard cellular radiator. The company now builds all of its own radiators, which are of the well-known cellular or honeycomb construction with square air opening.

The Packard dry-disk clutch of last season is continued unchanged. This is a multiple-disk design with alternate sets of disks, one set being faced with an asbestos fabric. From the clutch to the gearset power is transmitted through a propeller shaft with two universal joints, one at the front end of the shaft, the other at the rear, and paralleling this shaft is a torsion



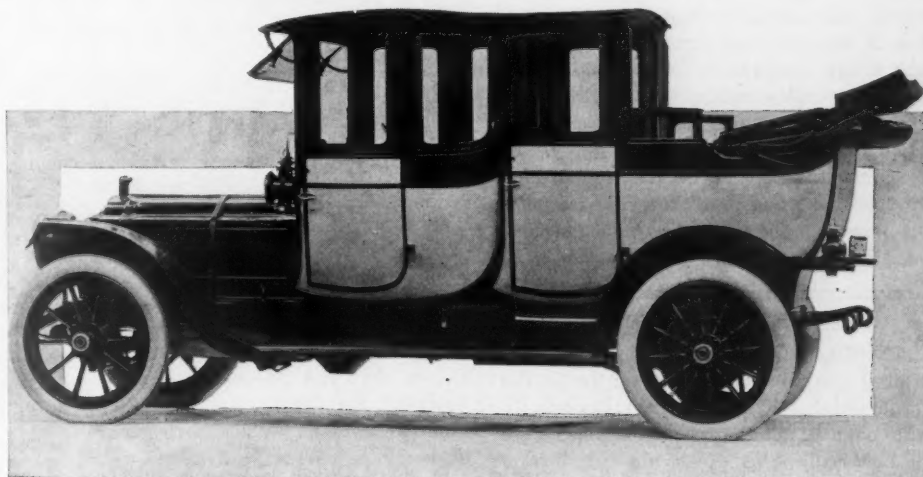
INTAKE SIDE OF PACKARD SIX 1912 MOTOR; 1, TRUNNION SUPPORT; OP, CIRCULATING OIL PUMP LOCATION; 2, ONE OF THE SIDE SUPPORTS; P, CLUTCH PEDAL SHAFT; K, CLUTCH COVER PLATE; K1, PART OF CLUTCH HOUSING; V, OIL PET COCK; V1, PETCOCK CONTROL; J, FORWARD UNIVERSAL JOINT. THE TWO BREATHER PIPES FOR THE MOTOR CAN BE SEEN

tube spring supported at its forward end. In addition to this torsion tube are two radius rods extending from the rear axle housing to the side members of the frame, with which they have a pivotal support.

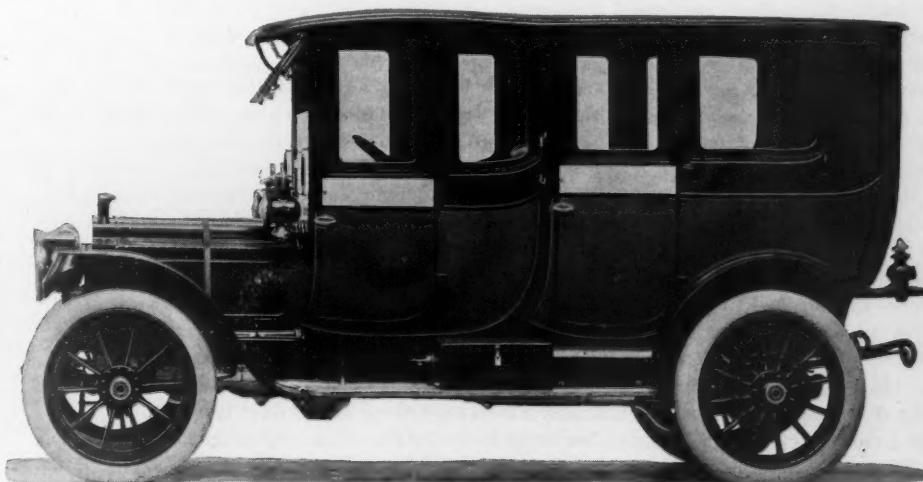
The Packard was the American pioneer in the matter of a unit gearset and rear axle construction and continues this for 1912 in practically unchanged form, excepting in the six, the alterations of which already have been noted. The unit axle and gearbox has been largely copied by American builders and from a design point of view is in contrast with that design in which the gearset is incorporated as a unit with the motor.

Brakes on the Packard models are all located on the rear wheels. The service brakes are external contracting bands lined with an asbestos fabric all around excepting about one-third of the circumference, in which space are used three segments of metal. The emergency brakes are internal expanding members, with the drums enclosed to exclude dirt.

The Packard frame and spring design remain as heretofore. The frame side members are arched over the rear axle, as has been the company's custom for several seasons. These side members are slightly offset at the dash and the upper flanges are widest at the dash and gradually taper towards the rear. Spring suspension in front and rear is by semi-elliptics. The front axle is a stout reinforced tubing of large diameter. The tie rod is in front of the axle on the four-cylinder models, but in rear on the six-cylinder designs. Steering is through a worm and sector mechanism.



1912 PACKARD SIX WITH IMPERIAL LANDAULET BODY



1912 PACKARD 30, IMPERIAL LIMOUSINE BODY

FEW products familiar to our modern commercial life are surrounded by so much mystery as rubber. The source of its supply and the means by which it is prepared for market are subjects of interest not only to the motorist, but to the average citizen as well.

Civilization first heard of rubber in Herrera's account of the second voyage of Columbus in the year 1493, where he speaks of elastic balls made by the natives from the gum of a tree.

The first authentic account of its practical use was recorded in 1745 by the leader of a French government expedition returning from South America, who reported that the natives secured from the juice of a tree a certain gum which was very elastic, impervious to water and used in making bottles, shoes and squirt guns. Thirty years later an Englishman brought from Assam, India, a soft, spongy substance which would erase lead pencil marks and which afterwards became known as India rubber.

Early Uses of Rubber Gum

Many primitive uses were found for this wonderful gum, but owing to its susceptibility to changes of temperature it was of little commercial value until early in the last century. At that time it was discovered, after a great deal of experiment, that by mixing sulphur with crude rubber, subjecting it to a high degree of heat, a material was produced which was both tough and elastic and would retain those properties under varying temperatures. This process, called vulcanizing, is the basis of rubber making today. So great has been the development of rubber manufacture since that time that its products now exceed a value of \$500,000,000 annually.

KENTUCKY STIRRED UP

Louisville, Ky., April 16—Plans for building the Lincoln way from Louisville to the old home of Abraham Lincoln in Larue county and the reconstruction of the old Louisville and Nashville pike from Louisville to Nashville, took definite shape at a meeting held at Elizabethtown recently. More than 700 citizens, many of them motorists, from the counties of Jefferson, Hardin, Larue, Simpson, Warren, Hart, Barren, Edmonson were present to pledge themselves to carry out any plans made at the conference. The sentiment of the meeting was largely in favor of a co-operative effort to rebuild the pike in 1 day. While no date was fixed by the delegates, it is likely that August 15 will be selected as the day on which to finish the project. So enthusiastic were the delegates in the movement launched to reconstruct the road which is ultimately expected to connect Minneapolis, Minn., with the Gulf of Mexico, that all of them by a rising vote pledged themselves to work in the interest of the movement until all of that roadway in Kentucky has been made the model highway of the commonwealth.

Tire Demands of Electric Tradesmen

Question of Solids vs. Pneumatics for Pleasure Cars Discussed by Expert Who Favors the Former, Claiming Economy in Current Consumption and More Mileage as Advantages

EDITOR'S NOTE—The following paper was read before the monthly meeting of the Electric Vehicle Association of America, March 28, 1911, by Dan C. Swander, manager of the Firestone Tire and Rubber Co., of New York.

Next to rubber the most important material in a pneumatic tire is the fabric which gives form and rigidity to the tire. Extensive experiments have been made with all the textiles to secure a fabric which in the finished condition will combine best with rubber, be unaffected by the chemical action in manufacture and demonstrate the greatest strength. Silk and linen show great strength, but when combined with rubber will not produce the results which can be obtained from cotton. There are many grades of cotton, the best of which is known as long staple sea island. There has been a great amount of thought, time and money devoted to the combination of rubber and fabric into a successful pneumatic tire and develop it to its present stage of perfection.

Tires for Electrics

The demands upon tire equipment for electric vehicles depend so much upon whether they are of the pleasure or commercial type that it is advisable to consider each class of vehicle by itself.

In pleasure vehicle tire equipment opinion is somewhat divided between solid and pneumatic tires. Some manufacturers design the springs of their cars with a view to using one or the other kind of tire equipment. Our experiments have shown that the pneumatic tire especially designed for service on electric pleasure vehicles cannot be made to secure both economy in current consumption and satisfactory mileage. With this in view we have dismissed pneumatic tires as a serious possibility on pleasure cars. In doing so we have borne in mind the annoying possibilities of punctures and blow-outs on pneumatic tires and on the other hand we have not lost sight of the fact that the rubber which wears off from the solid tire impairs its efficiency.

The moderate speeds at which electrics are driven does not demand the superior resiliency of the pneumatic tire to protect against jarring the batteries and mechanism. The drift of sentiment today confirms our position in favor of special solid tires.

Solid tires for electrics are in various shapes. Besides the standard pyramid shape there is the dual tread, with grooves cut in the sides and diagonally across the tread to increase the resiliency and secure a nonskid effect. Several companies

are making tires of this type. In order to determine the relative economy of the special shape tire, I believe that a great deal depends upon the comparative size of the cross section of one brand of tire to another; in other words, the quantity of rubber used and upon the quality of the rubber, rather than merely the shape of the tire. This type of tire can also be used successfully in light delivery service. Some of these tires have the side wire style of fastening and others the clincher type.

Cushion Type of Solid

With respect to the subject of standardizing dimensions, weights, etc., of tires I think that in the cushion type of solid tire the need of standardization will be found greatest, as some sizes which are classified alike vary nearly 40 per cent in the volume of rubber as between different makes. For instance, a 2½-inch tire of one type has nearly as much rubber as a 3½-inch of another type. This naturally complicates the question of comparing tires and makes a great variation in the mileage and service, which can be expected.

Now regarding commercial electrics, the tire question is an old one, a twin in age with the vehicle itself, but for this class of vehicle I think you will agree with me that the use of pneumatics is not to be seriously considered on account of the great weight of loads and the destruction these loads would necessarily bring upon pneumatic tires.

Twelve years ago when the company with which the author is identified entered the field there were on the market only two types; a flange tire and an internal wire tire, the latter having three or four circumferential cavities near the base, in which wires were inserted when applying. The latter type of tire is in disuse and instead we have now various other types. One type, the block tire, although in successful use on the rears of heavy gasoline trucks, I do not know of having been used to any extent on electric-driven vehicles. In considering this type of tire the possibility of jarring the batteries, owing to the unevenness of the tread, is an item to be seriously considered, and although this type is one of our line of side-wire tires, I would hesitate to recommend it for electrics in competition with the regular pyramid shape of side-wire tire.

Flange Type of Tire

The tire industry offers a flange type of tire with which you are more or less familiar, that tire having in the rubber either cross bars or circumferential wires

for Pleasure and Commercial Cars

Several Different Types for Commercial Use Have Been Offered—Duals Are Popular in Business World, Which Also Is Interested in Side-Wire Devices Quite Recently Introduced

or hard rubber base, and being retained on either side by a removable upright flange, the purpose of the flange being to facilitate removal and application of the tire with the simplest possible machinery.

In the past year or so a wireless tire has been introduced, which in some cases is giving good service and which type has its own advocates. This tire has a resilient tread, cured to a hard core and the core in turn fastened to a metal base, which comes in contact with the felloe band of the wheel and is removed by detaching keys or other contrivances on the outer edge of the felloe band which permit the tire to slide off and on.

There is also the hard rubber tire with wire mesh base and various other types, all competing with the standard side-wire tire, the latter of which is made and sold by four of the largest rubber tire manufacturers in the country.

The channel type of side-wire tire came first and was made first about 12 years ago. Tires were then built up in a straight channel or trough, layer on layer and when of the proper thickness, were enclosed in a three-piece mold and cured. After curing, the mold was unbolted and the tire taken out. At that time tires were built only in long lengths, of the butt-end style, but as the diameters of wheels became standardized these tires were molded round to the exact size, which is the process in vogue today in making commercial vehicle tires. Instead of building up the tires by layers of rubber, as in the old days, the compounded rubber is now placed in what is termed a tube machine, from which it issues through a die, the size and shape desired. Cross bars are then inserted and the whole is cured in one homogeneous mass.

Dual Tire Introduced

After the single motor tire, came the dual motor tire for rear wheels of heavy cars. This was brought out 4 years ago and was promptly adopted by the manufacturers as regular equipment. Its advantages in resiliency and the strength of the fastening of the tire are too well known to require discussion here.

The tendency of standard side-wire tires to give out at the base before the tread is fully worn down is greatly reduced in a recent improvement. This loosening at the base has been caused principally by the fact that the cross bars and side wires were both round, giving only a small point of contact where the side wires pressed down upon the cross bars. The ensuing wear caused a loosening up of the fastening, but in the side-wire tire as made today the cross bars, as you will see illus-

trated on following page, have a flat top and the side wires are flat at the point of contact with the cross bars. This gives two flat surfaces of contact instead of merely points of contact and considerably reduces the wear.

Another new improvement is the quick removable rim, which is designed much like the Firestone demountable rim for pneumatic tires. With this rim an injured tire may be removed and a fresh one substituted without material delay to deliveries. It is not recommended that every truck carry a spare tire and rim; it may be more convenient to carry spare rims at headquarters ready to send out in case of emergency.

Resiliency of the Tire

Of prime importance to the electric vehicle owner is the current consumption and resiliency of the tire. This is the effect of the secret rubber compound of which the tire is made. For that reason I may be excused from going into particulars regarding the rubber composition of the tires with which I am familiar. It is of the greatest importance to the electric vehicle trade that its tire have a compound which will consume the least current and at the same time will have ample resiliency to prevent jarring the batteries and to protect the mechanism of the car from the shocks of road travel. A hard tire will draw less current than a very soft one, but the damage it will do to the batteries and mechanism makes a hard compound entirely out of the question. A resilient tire that will absorb stones and pebbles will often consume so much power as to make it expensive to maintain and also fail to give sufficient mileage. A soft tire is not necessarily an expensive tire. But a tire that combines economy of current consumption with the proper resiliency and will compress and relax quickly is an expensive proposition when combined with a good wearing quality. A tire of this kind is the most expensive of all to make.

Adaptability to Repair

Another feature which has caused a good deal of study and care in the construction of a tire is its adaptability to repair. This is a very important item, as it often happens that a tire will be cut, torn or otherwise injured in one spot, but be perfectly sound in all other places. It is a source of gratification to the company I represent that their tires can be repaired economically, to give frequently double the normal length of service. Repairs can be made in either of two ways: First, by prying off the side-wire, cutting off a section of the injured tire and substitut-

ing a new piece with enough of the tread trimmed down to equal the balance of the tire. Second, when any serious separation has occurred in the base the apertures can be cleaned out, filled with semi-cured rubber and the whole placed in a mold and recured to give thousands of miles of service.

We claim that there is great room for improvement in solid rubber tires for commercial motor vehicles and we predict that tire expense will be greatly lessened in a few years, partly through a lower price of crude rubber, which is bound to come as a result of increased harvesting and greater acreage, and partly through improvements in tire and rim construction. There is one great opportunity for reduced tire expense within the grasp of every maker of a commercial vehicle and that lies in equipping the car at the factory with an adequate sized tire. Our recommendation on tire sizes for commercial motor vehicles is as follows:

2	.....	2½	.....	2	.....	500
2½	.....	2	.....	2½	.....	750
3	.....	3½	.....	3	.....	950
3½	.....	4	.....	3½	.....	1,375
4	.....	.....	.....	4	.....	1,750
5	.....	.....	.....	5	.....	2,000
6	.....	.....	.....	6	.....	3,000
7	.....	.....	.....	7	.....	4,000
2½ dual	.....two	3	.....two	2½	.....	1,900
3 dual	.....two	3½	.....two	3	.....	2,500
3½ dual	.....two	4	.....two	3½	.....	3,500
4 dual	.....	.....two	4	.....	.....	5,000

Care of the Tires

Another great opportunity lies in the care of tires. The driver must not forget that a tire, unlike the mechanism of the car, is an uncomplaining creature. It cannot make itself heard when it is being injured and the only thing for the driver to do is to refrain from abusing the tire and to examine it in order to prevent little injuries from growing into big ones.

ASKS LINCOLN WAY FUND

Washington, D. C., April 16—Advocates of a Washington-Gettysburg highway as a memorial to Abraham Lincoln will be interested to learn that Representative Lafean, of Pennsylvania, has again introduced in congress the bill appropriating \$3,000,000 for the construction of the highway. As a further advancement of this project the Lincoln Road Association will seek to have the law of the Sixty-first congress, appropriating \$2,000,000 for a Lincoln memorial, amended in such manner as to permit the erection of a portion of the memorial outside of Washington in the near future.

The Lafean bill provides for the construction of a highway in memory of Lincoln from the neighborhood of the White House to the Gettysburg battlefield, with a suitable structure to mark the beginning and ending of the highway. The highway is to be at least 200 feet wide.

"Those who have been recommending a government highway to Gettysburg as a fitting tribute to Abraham Lincoln intend to continue their efforts in that direction," said Representative Lafean.

From the Four Winds



A RACING STRETCH IN FRANCE

This gives a fair idea of the home stretch of the course over which the French grand prix will be run July 2. It practically is a straight dash of about 10 miles and which is said to be capable of a speed of 100 miles an hour. Optimists predict an average of 80 miles an hour for the 372-mile race

BUICK Drivers Selected—For the model 100 Buicks entered in the 500-mile international race at Indianapolis, May 30, Arthur Chevrolet and Charles Basle have been nominated as drivers.

Can Protect Roads—A bill has been passed by the Ohio house of representatives and is now pending in the senate, which confers on boards of county commissioners the authority, during the wet season of the year, to keep motor cars and heavy wagons off certain improved highways in the state of Ohio.

Adds to Rayfield Purse—The Findeisen & Kropf Mfg. Co., of Chicago, making the Rayfield carbureter, has added an additional \$1,000 to the purse which is to be given to the winners in the 500-mile race at Indianapolis, making a total of \$3,000 which will be given to drivers whose cars are fitted with Rayfield carbureters and who finish first, second, third or fourth. The money will be divided, \$2,000 to the winner; \$500 to second, \$300 for third and \$200 for fourth.

Indiana Tour in July—It has been decided definitely that motor car manufacturers of Indiana will give an all-Indiana four states tour early in July, which will last about 10 days. The tour will be restricted to cars manufactured in Indiana. There will be no competitive feature aside from the fact that cars must register at two controls a day. The route selected is as follows: Starting at Indianapolis and driving west over the national road to Terre Haute; thence to Peoria, Ill., southwest to St. Louis; follow the Mississippi river to Davenport and Rock Island, then

across northern Illinois to Chicago, returning to Indianapolis. P. P. Willis, assistant secretary of the Indianapolis Trade Association, has been selected as general secretary for the tour.

Show at Bangor—The annual motor show at Bangor, Me., opened last Monday with a good representation of pleasure and commercial cars. Some of the Boston dealers made the run down there over the road to confer with their subagents.

States Co-operating—The last meeting of the Automobile Club of Maryland was designated as Delaware night. Four members of the Delaware Automobile Club were present and spoke about the roads of that state. A plan on the proposed road to the Maryland line and a movement to have the improved Maryland road to the Delaware line were discussed. Within 60 days the Delawareans stated that road signs to the Maryland line along roads in their state would be posted. Within 45 days signs on the Maryland roads to the Delaware line will be in position.

New Touring Club Department—The Touring Club of America has just added a department for non-owners at its headquarters, Broadway and Seventy-sixth street, New York city. The object of this department will be to supply cars to non-owners for any length of time that may be required. In addition, the club will also prepare agreeable routes, in the most picturesque parts of the country, giving special reference to such localities where good roads may be found and satisfactory hotel accommodations. The new department has perfected arrangements by means of its affiliated interests to supply com-

fortable and up-to-date touring cars accommodating from three to six persons, in charge of expert chauffeurs, for periods of from 3 days to as many months as desired.

Possibly a Vermont Show—The St. Johnsbury Automobile Association has decided to make an attempt to hold a motor show lasting 3 days, beginning May 10. It has received the promises of support from other bodies in Vermont and from a number of dealers. This will be the first show ever held in the city and it is arousing much interest.

Davenport's Election—The Davenport Automobile Club, of Davenport, Iowa, at its annual meeting elected the following directors who will meet the latter part of the month to elect officers: Dr. J. T. Haller, Charles Zoekler, L. M. Marks, D. R. Lane, G. D. French, P. Bendixen and Woodworth Clum. Resolutions were also passed favoring a petition to the board of supervisors in behalf of better roads.

Syracuse's Banquet Plans—The Automobile Club of Syracuse has issued 100 non-member invitations for its annual banquet, which is to be held at the Onondaga, Syracuse, N. Y., on Thursday evening, April 27. Many novel stunts are to be had. Among these is placing a horn of different tone at each table with which to signal the waiters to replenish the gasoline supply. The club has secured C. Arthur Benjamin, president of the Syracuse Automobile Dealers' Association, as toastmaster.

Seek Rain Insurance—Negotiations are on between the Indianapolis Motor Speedway Co. and the Lloyds of London, whereby the former are trying to get the latter to accept a rain risk for Memorial day, when the 500-mile international sweepstakes is scheduled. The speedway company is willing to pay a premium of \$10,000 to cover a guarantee of \$100,000 to be paid by the Lloyds in case of rain. The Elgin Automobile Road Race Association also is seeking the same kind of insurance for the national stock chassis road races in August.

Lowell Can Close Roads—The lower branch of the Massachusetts legislature has passed the bill to allow the Lowell city authorities to close the roads on the Merrimac valley course for a motor race next September. It will now go to the senate, and as Senator Joseph Hibbard, of Lowell, put the bill in, he will be able to steer it through that branch without much trouble, it is expected, and Governor Foss will sign it. Not much has been said in Lowell about a race yet, but it is thought that after the bill is passed the race problem will then be taken up by President John Heinze, of the Lowell club, and a conference will be held with the officials in charge of the racing circuit. Nothing has

been done either to pick out any date for motor racing in Boston, but the Bay State officials probably will get busy on plans very soon.

Louisville Election—At the annual meeting of the Louisville Automobile Club the following officers were elected: Rush C. Watkins, president; Eugene Straus, first vice-president; Colonel W. B. Haldeman, second vice-president; B. B. Watts, secretary, and Walter I. Kohn, treasurer. The date for the orphans' day was placed at June 2.

A. A. A.'s New Officers—Officers of the Automobile Club of America have been elected as follows: Henry Sanderson, president; George W. Perkins, vice-president; Robert Morrell, second vice-president; Edward Shearson, third vice-president; Dudley Olcott, treasurer; governors, Henry Evans, Henry R. Taylor, F. Dunderwood and George S. Baker, Jr.

Will Support Racing—Announcement has been made that the Belmont Driving Club of Philadelphia will foster motor racing this season and that application will be made for membership in the American Automobile Association. It is purposed holding a series of sanctioned motor races over the 1-mile course at Narbeth, but a short distance outside of Philadelphia.

Moyer Made Pathfinder—W. E. Moyer, president of the Des Moines Automobile Dealers' Association, has been made pathfinder for the 1911 Little Glidden tour, to be conducted by the motor department of the Hyperion Field and Motor Club. The run will leave Des Moines June 16 for 4 days. The run is to be followed by a stag smoker at the Field and Motor Club, at which the prizes are to be awarded. Moyer expects to leave May 10 on his pathfinding tour.

Ohio's Latest—A bill has been introduced in the Ohio house of representatives, and reported favorably by the committee on roads, providing for the graduation of registration fees for motor cars and motor cycles, in accordance with the horsepower of the engines. The fees provided in the bill are: Motor vehicles of less than 30 horsepower, \$5; motor vehicles having 30 horsepower and less than 50 horsepower, \$10; for motor vehicles having more than 50 and less than 80 horsepower, \$15; motor vehicles having more than 80 horsepower, \$20.

Public-Spirited Citizen—United States Senator Isaac Stephenson, of Marinette, Wis., millionaire lumberman, has entered into the spirit of the good roads movement in Wisconsin and will spend \$30,000 to prove that his interest is real. The expenditure will be directly in line with the movement started at Milwaukee to build a model highway from Milwaukee to Chicago. The route runs through the immense stock farm of Senator Stephenson near Kenosha, Wis. The superintendent has been instructed by Mr. Stephenson to build a mile and a quarter of model road and

experts in road building have been employed to take charge of the work. The road will be of macadam and will be completed by fall.

Kills Providence Show—The Rhode Island legislature refused to pass the law presented with an idea of using the state armory at Providence for motor shows. A couple of riders were tacked onto the bill to allow the use of the building for other purposes, but these were rejected and then the bill itself was killed. That means there will be no show at Providence.

Police Are Polite—The police department of Dayton, Ohio, has a unique method of dealing with owners who are inclined to violate the state motor laws through carelessness. Rather than hale a driver into court for an infraction of the laws, which may have been unintentional, a warning is sent to the driver. The warning states the complaint, and if the alleged violation is not abated arrests follow. However, the police department finds that this system is productive of good results, and it is seldom necessary to arrest.

Long Tour Planned—Twice across the American continent by motor cars, with five side trips from each of forty cities totaling a mileage greater than the circumference of the earth, is a tour that will be made by B. O. Tilden, starting from New York. Mr. Tilden with several associates will conduct a national educational campaign in the interest of sanitation. He will be on the road continuously for 8 months, traveling more than 25,000 miles. The trip will not only cover the United States, but will include the Hawaiian Islands, British Columbia and a large part of Eastern Canada. In addition,

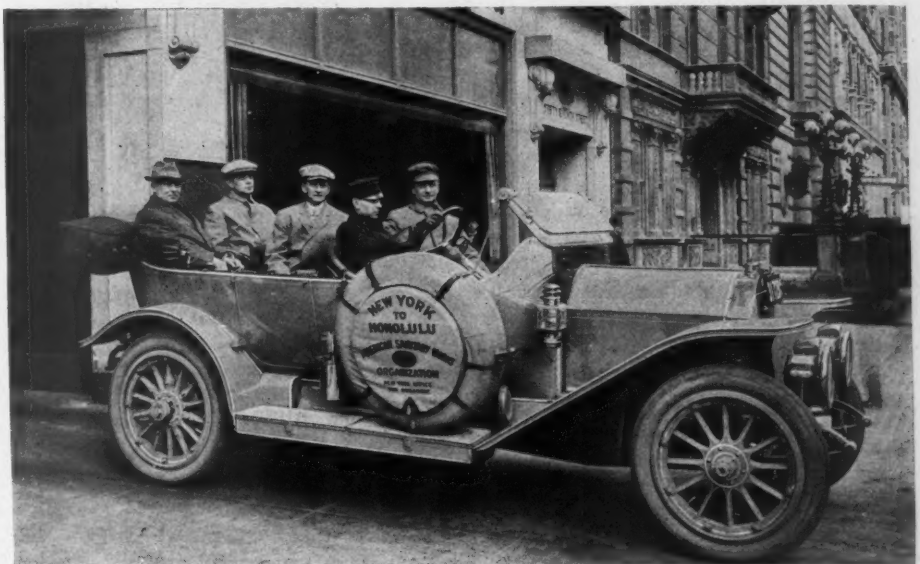
the coast on the Atlantic and Pacific oceans will be skirted for a considerable distance to take in the larger seaports.

New Milwaukee Director—William H. Raymond has been elected a member of the board of directors of the Milwaukee Automobile Club to succeed George C. Forgeot, who resigned because of removal from the city.

Racing Driver Killed—While training on the Elm Ridge track at Kansas City, Mo., last Friday Ned Crane was killed when his Buick turned turtle, caused by a punctured front tire. Mechanician Bert Dodge was severely hurt. Crane drove a Staver-Chicago in the Elgin road races.

Maryland's Tag Count—Just 4,268 Maryland licenses have been issued by Motor Vehicle Commissioner George to date. Many motorists have been taking out their licenses the past few days, owing to the moderate weather. Last year the total number of licenses was 4,800, but this will be far exceeded from present indications.

Missourians List a Run—The Missouri Automobile Association, recently organized, announces a 1-day reliability run for owners and dealers, to take place Memorial day, May 30, in St. Louis county. Many invitations have been issued to owners of private cars to participate. The specific plans have not yet been completed by the committee in charge, but it is certain that they will include a sociability run, open to all motor car owners in St. Louis and St. Louis county, a woman's run and a dealer's run, with two classes of entries, touring cars and runabouts. The course, it is planned, will be about 40 miles around, the dealers to make the circuit three times and the others once.



BOUND ON A LONG JOURNEY

This shows the sanitation experts who will travel 25,000 miles in a Stoddard-Dayton on an educational campaign, making a double transcontinental trip and a tour of Hawaii. In the front seat are B. O. Tilden, president of the American Sanitary Works, and Driver Lief Bernhardt. In the tonneau are: J. M. Tilden, secretary of the American Sanitary Works; John P. Seiler, eastern manager, and W. A. Cawley, western manager.

When and How to Grind the Valves

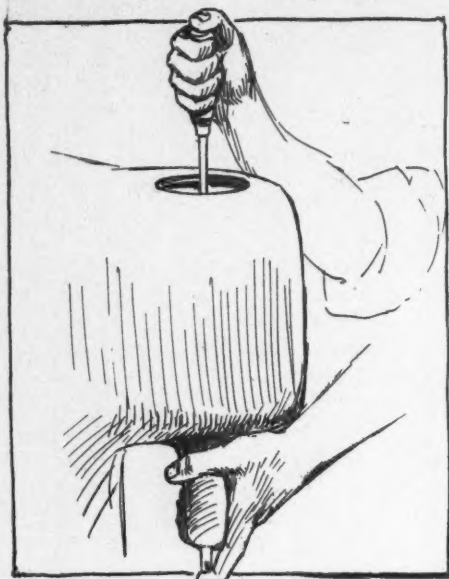


FIG. 1—THE OLD WAY

WHEN a motor begins to show a loss of power, or a misfiring develops, the first possible cause to be suspected should be the compression, for it is the most readily tested, it being merely required that the operator crank the motor over a number of times slowly, noting whether or not the compression is weaker in some cylinders than in others, or a trifle wanting in all. These symptoms generally indicate that the valves need attention. A valve may leak, due to more than one cause; if adjustable, the cap or nuts on the push rod may have become loose and moved up or down, holding the valve off the seat or retarding its opening and closing; the head of the valve or the stem may be warped from the heat; or, as is most commonly the case, the valve seat is pitted or covered with a carbon deposit. If the trouble is caused by the lack of adjustment, the valve should be removed, cleaned, examined, and if in good shape replaced and adjusted so that there will be a clearance of 1-32-inch between the end of the valve stem and the push rod if tested while the motor is cold, or from .008 to 1-64-inch if tested while hot.

Replace Warped Valves

A valve whose head is warped or whose stem is bent should be replaced with a new valve. A bent valve may be satisfactorily straightened and a warped head trued up in a lathe; but when this warped condition has been brought about by the heat of the motor a straightening or truing up process of this sort will not remove the something in the stock from which the valve is made, which is the primary cause of its warping. On the other hand, the material of a valve may be quite uniform in structure and temper, but its position in the valve chamber and the relative position of the valve chamber to the com-

bustion chamber of the cylinder may cause one portion of a valve head to be subject to much more heat than the other.

For the valve that is pitted, grinding is the proper treatment. After having scraped the carbon from the valve chamber and seats, and before grinding, it is well to block up the entrance to the cylinder with cloth as at C, Fig. 2, having a string S secured to it, to catch any particles of emery that otherwise might enter and score the cylinder walls and pistons when the motor is again put into action. To grind in a valve which is badly pitted it is well to begin with rather a coarse grade of emery. Apply a coat of cylinder oil to the face or seat of the valve, distributing it with the tip of the finger;

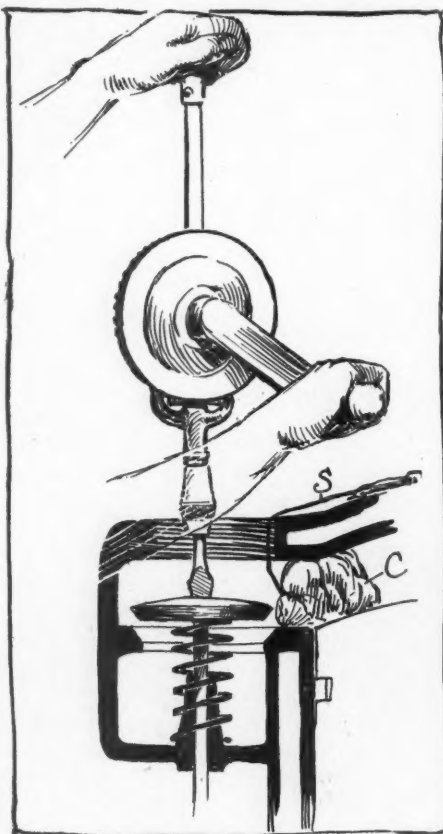


FIG. 2—AN EASIER METHOD

then dip the oily finger into the emery and apply that which adheres to it to the seat on the valve. Be careful to keep the stem clean, so the guide will not be enlarged. If a screwdriver or plain valve grinding tool is to be used, the operator should hold the valve grinding tool in one hand, take hold of the valve stem with the other, assume as comfortable a position as possible, and begin the grinding operation. This is done by turning the valve about a half revolution back and forth on its seat in the cylinder by means of the tool in one hand, and occasionally lifting the valve from its seat and shifting it around with the other. The valve should be lifted about $\frac{1}{8}$ to $\frac{1}{4}$ inch

every five or six reversals to keep the oil and emery well distributed. The pressure on the tool should be slight. Every few minutes the valve should be removed, the seats cleaned off and examined, and a new solution of emery and oil applied.

When the pits are almost removed continue the operation with flour of emery instead of the coarser grade; remove the valve oftener, applying more oil and less emery each time, until a good seat is obtained all around; then finish up by polishing the seats with oil only. Kerosene is most effectively used in finishing the seats of a valve, and the higher the polish obtained the less chance for a carbon deposit.

In many cases where much grinding is necessary, such as when the seats are badly pitted, or the head slightly warped, the method of using the breast-drill, as shown in Fig. 2, is a most convenient one. Without the use of the spring, however, the use of the brace and bit or the breast-drill would be found quite impractical, owing to the fact that as both hands are required to operate either one, it would be found very unhandy to be continually releasing the hold of one hand to lift the valve from its seat in order to distribute the abrasive or grinding material.

How to Make Spring

The spring should be so large that it will fit over the end of the valve-guide, and of sufficient tension to lift the valve and brace about $\frac{1}{8}$ to $\frac{1}{4}$ inch when the weight of the hand is lifted from the top of the brace. It is important that when a brace and bit is used it should not be revolved continually in one direction but should be worked back and forth a quarter to half a revolution at a time in just the same manner as if a screwdriver were employed.

This spring may be made as shown in Fig. 3, by sticking the end of the spring wire in the slot or hole usually found in the end of a valve stem, or by simply making it fast in the vise with the end of the stem, and then winding it around the



FIG. 3—MAKING A SPRING

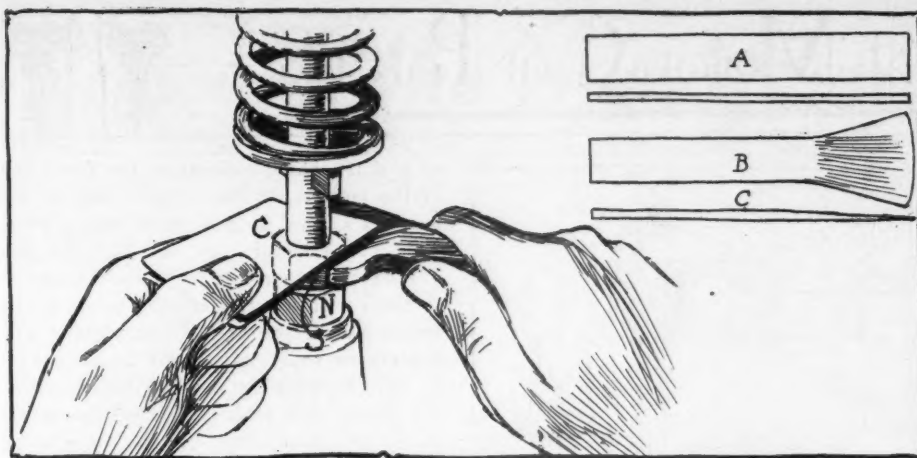


FIG. 4—ADJUSTING VALVE TAPPETS AND A TOOL FOR LOCATING NOISY ONES

stem, as illustrated. In winding a spring on a valve stem, generally it will be found that when removed from the stem the diameter has increased just enough to allow it to slip over the portion of the valve-guide which projects into the valve chamber; if not, any piece of round metal or wood of a larger diameter may be used.

Testing the Valve Seat

When a valve has been ground in so that the seat appears to be good, it may be tested by drying out the chamber under the valve seat; then placing the valve on its seat and pouring a small quantity of gasoline into the chamber above the valve while it is being held tightly onto its seat as it would be if the spring were in place. After a few moments, this gasoline should be mopped up with a piece of waste and when thoroughly dry on top the valve should be removed; if the chamber below the valve is dry, indicating that none of the gasoline has leaked through, it is a fair indication that the valve is gas-tight.

In order that a motor may run as quietly as possible, with excessive wear of the valve mechanism eliminated, it is important that the valve tappets or push rods be kept in proper adjustment; and a few words and illustrations relative to the means and methods of regulating the space between the valve stems and the valve operating mechanisms may be appreciated by motorists whose motors are noisier than necessary on this account. Generally the space between the adjacent ends of the push rods and valve stems should be between 1-64 and 1-32 inch, sometimes more but rarely less. Of course the smaller the space the less noise, but sufficient space must be allowed for elongation of the valve stem due to expansion when the motor becomes warm, and for irregularities in the shape of the cam or roller. It often happens that one or two of the valve tappets of a motor may be greatly in need of adjustment, whereas the others are in comparatively good shape; in such cases there is a decided clicking sound at regular intervals when the motor is in operation. For locating the noisy valves in cases of this kind, a simple tool, such as is shown at B and C, Fig. 4, may be used to advantage. This is made from a strip of brass

about $\frac{1}{16}$ inch thick and 8 inches long, with one end tapered by laying the end on an anvil and pounding it into shape with a hammer. A tool of this kind can be readily slipped under a suspected valve stem as indicated in Fig. 6, and when the offending valve is found the insertion of the tool will cause the clicking to cease abruptly and remain quiet until tool is removed.

The experienced repairman can generally find a tappet that is badly out of adjustment in a very short time by simply working the tappets of each cylinder up against the valve stems and down again, with his fingers, while the piston of the respective cylinders are on their compression strokes.

Adjusting the Valves

If all the valve stem spacings of a motor are to be examined and adjusted, perhaps the best method to follow is to turn the motor over by hand until the piston in the first cylinder is about half way up on its compression stroke, at which time both valves of that cylinder should be tightly closed; then examine the space between the stems and push rods. In the absence of a suitable steel gauge for regulating valve space, many repairmen use a common business card, as shown in Fig. 4. The card C is folded once and slipped between the ends of the stem and tappet, the lock nut N is loosened, and the stud S is screwed up or outward until it just begins to pinch the

card and prevents it from sliding about as readily as at first. The card is then removed and the lock nut tightened.

When both the inlet and exhaust valves have been adjusted in this manner, each one should be individually tested with a single thickness of the card to see if the valves remain tightly closed throughout their required period. This is best done by sliding the single thickness of card gauge back and forth as the motor is being turned slowly from the closing to the opening points of each valve. The marks on the flywheel may be used to advantage in this operation if accessible, but they are not necessary. One can slide the card under a stem and turn the motor over until the card is seized, indicating valve opening, then a little farther until it is free again, which marks the closing of the valve; now, by turning still farther and continually sliding the card about, if the card is not seized before the regular time for the valve to open, according to either the position of the piston or crank-handle, the adjustment is about right, and if the card is prematurely seized the space is insufficient. The valve in each cylinder should be adjusted in the same manner.

Two Tappet Adjustments

In Fig. 5 a sectional view of the Oldsmobile valve tappet is illustrated. From all outward appearances this tappet is not adjustable, but if adjustment of the space S is desired, one has but to raise the valve stem V, remove the tappet and casing G from the motor, then take out plunger P and replace the disk D with one of a thicker or thinner size. These disks are furnished in thicknesses varying by thousandths of an inch. Another type of adjustable tappet that has given trouble to the uninitiated, is that of the Inter-State motor, shown in Fig. 7. The adjustable feature of this tappet is quite conventional, but to reduce the tappet noise to a minimum, all space between the valve stem V and the tappet stud T is eliminated by the spring S, which holds the stud T against the end of the stem V; the required space, in this case, being between the lower end of the sleeve L and a fiber disk D, where the sound is considerably muffled.

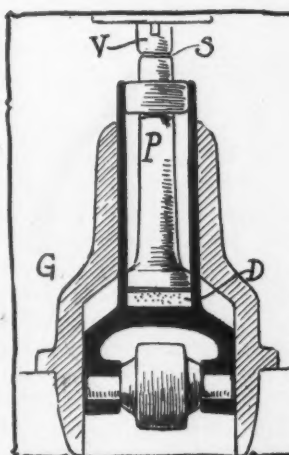


FIG. 5

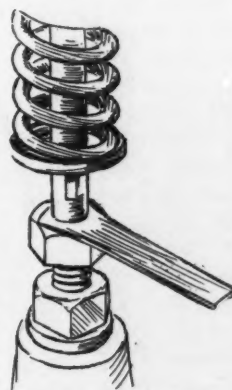


FIG. 6

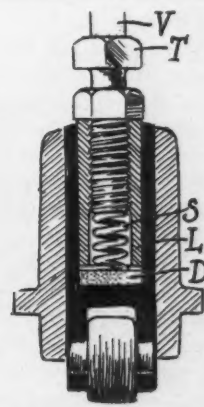


FIG. 7

Current Motor Car Patents

NEW Carburetor Design—No. 983,541, dated February 7; to Wm. T. Dawson, Helena, Ark.—The features of the carburetor covered by this patent are its mechanically operative means for simultaneously controlling the fuel supply and air supply to the mixing chamber, and the mixture supply to the engine. The construction of the carburetor is shown in Fig. 1; the air enters through openings P into the mixing tube or chamber TI, and as it passes the annular trough or pan E it absorbs liquid fuel therefrom and continues on past the throttle valve V to the engine. The level of the fuel in the pan E is automatically maintained by the float T in the float chamber F, which is in direct contact with the needle valve N that regulates the supply entering at GI from the supply tank. The flow of fuel from the float chamber into the pan E is governed by means of the needle valve D, the incoming air to the mixing chamber is regulated by means of a revoluble cap C having openings in it similar to those shown at P and which register with them, and all of these features are operated by means of the lever L secured to the rod O. The rod O communicates at its upper end by means of gears G, and at its lower end by means of the gears R with the cap C, and the butterfly valve V is mounted directly upon it; thus, as the throttle valve V is opened, the amount of air is increased, and the needle valve D raised to increase the admission of fuel into the incoming air currents, and vice versa.

Power Tire Pump—No. 985,338, dated February 28; to L. Gans, and G. Gans, Los Angeles, Calif.—This patent covers a power pump which is operated by the rear wheel of the motor car. The wheel is run onto a platform, on which it rests on two wheels or pulleys. When the motor is started the wheel rotates, operating the pulleys. One of these pulleys is on a shaft to which is connected the plunger of the air pump, so that the pump is directly driven from the load wheel on the car.

Strut Rod Construction—No. 985,247, dated February 28; to A. P. Brush, Flint, Mich.—This strut rod construction is used in combination with a shaft-driven car in which the propeller shaft is carried in a tube which has a telescoping universal joint at the forward end. The strut rod is jointly connected with the chassis frame and with the torsion tube near its front end. These connections being placed in such horizontal planes that the longitudinal axis of the strut intersects the horizontal cross axis of the universal joint; and the prolongation of the longitudinal axis intersects the roadway in the

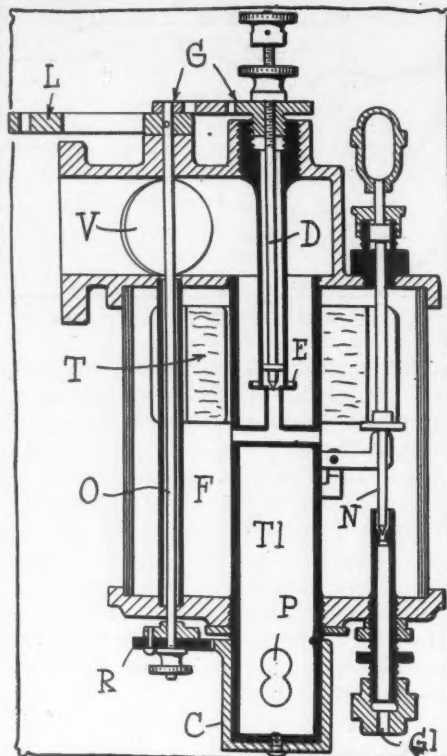


FIG. 1—DAWSON'S CARBURETOR DESIGN

same vertical plane as that in which the rear wheels contact with the roadway.

Illumined Tail Numbers—No. 983,946, dated February 14; to F. S. Stafford, Dallas, Tex.—This illumined license tag is in combination with the tail lamp located above it. The aluminum face of the tag consists of three or more transparent plates on each of which is one of the required figures in the number. These plates are slipped vertically into position and held there by bifurcated springs. A reflector is provided which directs a portion of the light against these numbers.

Motor Cranking Device—No. 987,528; dated March 21; to S. Wohldt, Derry, Pa.—This cranking device allows of starting the motor from the seat, as follows: At the left of the dash is a crank on the end

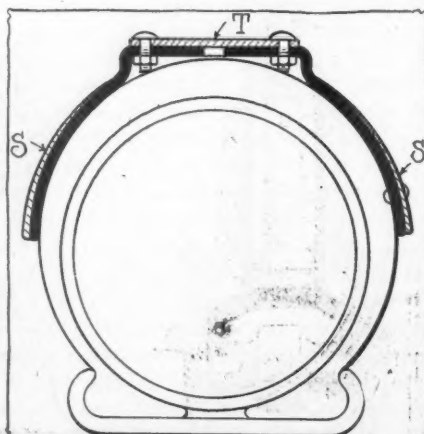


FIG. 2—BALDWIN'S TIRE PROTECTOR

of a shaft which extends to the front end of the motor. On the forward end of this shaft is a bevel gear in mesh with a bevel end of the motor. On the opposite end of the transverse shaft is another bevel in mesh with a corresponding bevel on the sleeve on the end of the crankshaft. The transverse shaft is pivoted at its center so that by pushing forward on the starting crank the sleeve on the crankshaft is forced back into clutch engagement identically as an ordinary starting crank is pushed in towards the motor to engage with the crankshaft.

Spring Tire—No. 987,292; dated March 21; to W. Dill, Norfolk, Va.—This tire is made up of two concentric clincher type rims spaced apart by a series of radial coil springs. In the outer clincher is carried a small size solid rubber tire. Attached to each side of the outer rim is a wood filler which embraces the side of the inner rim so as to exclude dust from the springs.

Swinging Lamp Bracket—No. 987,322; dated March 21; to R. H. Rohrer, Quarryville, Pa.—This swinging bracket is a horizontal arm which is anchored to the vertical axis of or hub of the front wheel spindle. Being rigidly connected with this hub, it follows that whenever the wheel is turned the lamp is also swung with it.

Swinging Headlights—No. 986,613, dated March 14; to C. R. West, Washington, Ind. The two headlights swing from the left steering pivot. The supporting brackets are secured to the side members of the frame and in these the yokes supporting the lamp are carried. A pair of springs are carried to support the lamp yoke so that the lamps are freed from any vibration of the road wheels. The connection between the steering pivot and lamp is attached only to the left knuckle. Between the lamps is an adjustable rod so that when one turns, or swings, both swing together due to this connection.

Metal Tire Protector—No. 986,670, dated March 14; to T. F. Baldwin, New York, N. Y.—In a tire shoe for a pneumatic tire there is in combination a series of metallic sections S, each covering about one-quarter of the exposed surface of the tire and having between them a resilient metal tread section or band T. These sections S are bolted to the central tread strip T; and the different sections S are connected to one another by pins passing from one section to the adjacent section. The sections S have their inner pads curved to correspond with the contour of the tire and so take much of the weight of the tread strip T.



The Motor Car Repair Shop

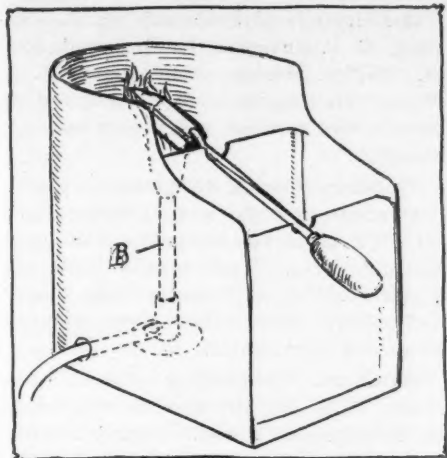


FIG. 1—A SIMPLE IRON HEATER

IN most repair shops the gasoline blow torch is almost always employed where small soldering repair jobs are to be done, but in some shops where gas is piped to the work benches a home-made heater for soldering irons, such as is shown in Fig. 1, may be made for use in connection with a Bunsen burner that will give excellent service. This illustration represents a combination shield for the flame of the burner and a holder for the soldering iron. It is made of thin sheet steel, iron or galvanized sheet iron, and the partitions for the support of the iron are riveted to the inside of the casing.

It will be noted that the supports for the soldering iron are of different height so that the iron rests on an incline; this is important, as the peak of the flame, which generally is between 1 and 2 inches above the top of the burner, should strike the iron nearest the big end, for this is the end that absorbs the most heat and retains it the longest, and therefore requires that the hottest part of the flame be directed at this point. The big end of a soldering iron acts as a sort of reservoir for heat, and without it the soldering iron would cool off very quickly. The shield portion of this contrivance might even be used to a good advantage with a blow torch, for it would serve to confine the heat a little, and by protecting the flame from draughts would permit the flame to play steadily upon the iron and heat it the more quickly.

Looking Over the Car

At this season of the year a general looking over of the motor car is in order, and a few words on just what looking over the car means might be appreciated. It means: Fill up the grease cups on the outer bearings of the rear axle; see that the pins of the brake shoes are well greased and free; fill the grease cups on the clutch collar and see that bearings are well supplied and tight; forget not the cups on the water pump and commutator spindle, or

those on the steering-gear case. Drain all the oil from the crankcase of the motor; flush with kerosene, then fill to the required amount with the best grade of gasoline-engine oil. Before leaving the motor, squirt a gunful of oil into the timing gearcase, apply a few drops of oil to the pushrods, carbureter and ignition control levers, and, in fact, to all moving parts in connection therewith. Oil the universal joints between the clutch and transmission with a mixture of oil and grease. Give a few drops of oil to the three oiling places on the magneto. Oil all running-gear and operation levers, including those under the footboards, the change-gear sleeve of the gaset, the brake rod and lever connections, the torsion and radius rod bearings, the spring shackles and all steering connections. Oil the starting crank and examine and grease all wheel

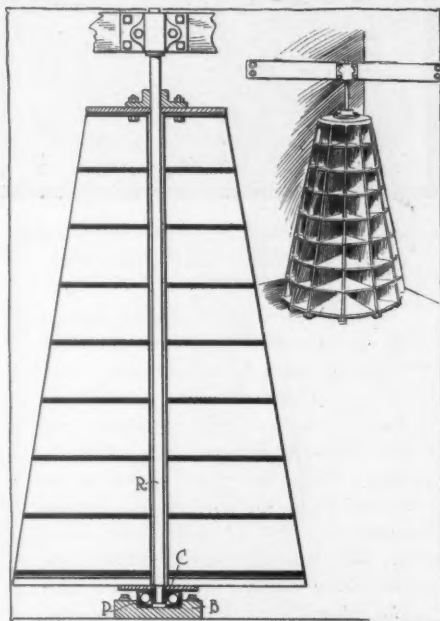


FIG. 2—REVOLVING TOOL RACK

bearings; and watch for lost motion wherever it is possible to be present. Take up lost motion wherever it is found; for it not only is the cause of much unnecessary noise, but it greatly interferes with the convenient and proper operation of the car. In the strictest sense of the word there is no such thing as a rattling good car, for a car that rattles is on its way to destruction, and unless put in timely repair and the rattling eliminated the car will cease to be a good one.

Holds Steering Gear

In Fig. 3 is shown a pair of blocks employed to grip the steering gear of a motor car during a process of overhauling or adjustment. Without these blocks or something of a similar nature it would be folly to secure a steering column in a vise as indicated, for not only would the tubing C of the column be marred and dented by

the jaws of the vise, but it would be impossible to grip it tightly enough without doing considerable more damage. The blocks B are of hard wood and are hinged together by a strip of leather L secured to the top edges of the blocks with nails. These blocks are best made by boring a hole the size of the steering column through a solid block of wood, then sawing the block in half, and, if necessary, planing down the sawed edges a little so that the blocks are free to get a good grip on the steering column.

Revolving Tool Rack

In Fig. 2 is shown a revolving tool rack such as is now being most advantageously used in the toolroom of a large motor car factory where economy of space and order have been carefully studied; and as it is now becoming necessary for motor car garages and repair shops to adopt up-to-date and systematic methods, it seems that suggestions of this nature might be appreciated by those who are anticipating improvements for the coming season. This rack comprises a large number of cells or compartments arranged as indicated, and the structure is mounted on an old cup and cone type of ball bearing.

A rod R of steel shafting is used as a guide and support for the rack, which is turned down at the lower end to fit the inner bore of the bearing cone C, and at the upper end it has a bearing secured to a wooden crossbeam. The block B, in which the cup P rests, may be of cast iron or hardwood and is secured to the floor by a few heavy iron bolts, spikes or screws. The rack itself is of wood and may be made at a reasonable cost by almost any carpenter. A rack of this type is particularly adapted to a shop or tool room where there is a vacant space in the center of the floor that can conveniently be used for the purpose, or where a small corner can be utilized as indicated in the sketch at the upper right hand corner of the illustration.

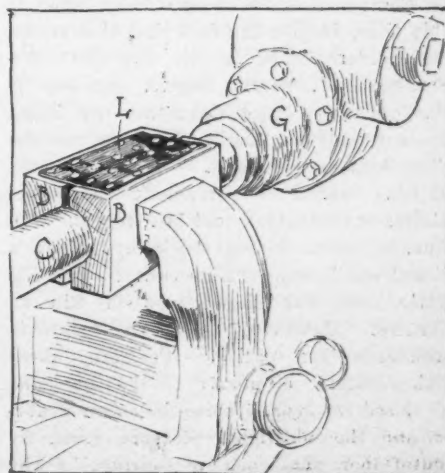


FIG. 3—STEERING GEAR HOLDER



Among the Makers and Dealers

ENTERS Chicago Field—C. M. Ballard, for 11 years with the Sprague Umbrella Co., Norwalk, O., has connected himself with the Universal Wind Shield Co. of Chicago.

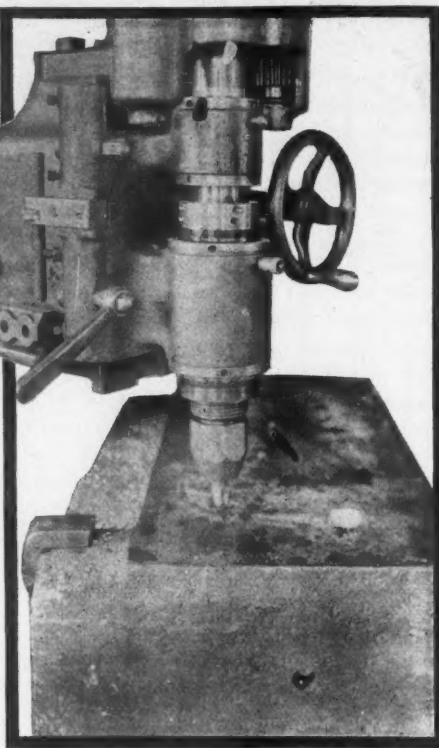
Change in Firestone Managers—George M. Martin, from the Firestone branch at Omaha, has been appointed manager of the St. Louis branch of the Firestone Tire and Rubber Co. He succeeds Wiley F. West, who goes to Atlanta, Ga.

Working Nights on Brocs—The Broc Electric Vehicle Co., of Cleveland, O., started running a night shift in some of its departments, in order to take care of orders for shipment on which dates of delivery have been advanced earlier than originally specified.

Stewart & Clark Appointments—C. P. Brewster, who formerly was with the Jones Speedometer Co., has been made manager of the Stewart & Clark Mfg. Co.'s Philadelphia branch and will in addition take care of Pennsylvania territory. E. G. Biddle, formerly with the Veeder Mfg. Co. for a great many years, is now associated with the Stewart & Clark company as New York state representative.

Henderson Makes Changes—Three important changes in the executive sales force of the Henderson Motor Sales Co., general distributor for the Cole and Westcott, Indianapolis, have taken place. E. H. Kiser, who was general manager of the Indianapolis branch, has been appointed Ohio manager, with headquarters at Columbus, Ohio. E. J. Kane, formerly manager of the Indianapolis factory of Bishop & Babcock Co., becomes sales manager of the retail department of the Indianapolis office. D. B. Sullivan, formerly of the retail department, takes personal charge of the Indiana business.

Mitchell Export Business—The export business of the Mitchell-Lewis Motor Co., of Racine, Wis., is exceptionally large at this time, despite the fact that this season is considered slow in this direction. According to G. Vernor Rogers, secretary of the company, large shipments are being made weekly to Russia, Germany and the Scandinavian countries. "South America at this season is purchasing limousines almost exclusively," said Mr. Rogers. "In Buenos Ayres during the rainy season a closed car is almost a necessity. There is little need for closed cars in Rio de Janeiro. However, as South American standards are entirely Parisian, these cities adhere religiously to the limousine or closed car type, despite the warm weather and the additional pleasure given by out-of-door and open-air touring." The J. I. Case Threshing Machine Co., of Ra-



DIE-MAKING AT OVERLAND FACTORY

Where motor car factories, such as the Overland, manufacture their own forgings, such as crankshafts, front axles, steering spindles, gear blanks, gearset shafts, levers, brackets, etc., the biggest problem is cutting the dies. This illustration shows an immense block of steel on a machine having one-half of the pattern cut in it. The die is made in halves, only one being shown in the illustration. The other half is practically the same. The die-cutter works entirely from blue print drawings, outlining on the steel block the form to be cut. A drill is used to do much of the roughing out with, but a great deal of hand drilling has to be done. Die-making consumes much time and calls for expert workmanship.

cine, also is enjoying a splendid export business, its selling organization covering the entire earth, sending so many orders that the 1911 production will not be nearly large enough.

Tate Made President—Frank R. Tate, manager of the United Motor St. Louis Co., was elected president of the St. Louis Automobile Manufacturers' and Dealers' Association, at the last meeting. D. B. Brownback, of the St. Louis Stearns Co., is vice-president, and Samuel Breadon, of the Western Automobile Co., is treasurer.

These directors were selected: H. B. Krenning, W. C. Anderson, W. B. Fewell, John H. Phillips, Herman Schmure and A. C. Webb. The association now has more than forty active members and twenty associate members.

Workmen Vote on Reciprocity—In a recent straw vote for and against reciprocity, 550 out of 648 well-paid mechanics at the big works of the Canada Cycle and Motor Co., Ltd., of Toronto, voted against reciprocity. Ninety-eight were in favor, while 550 were against it.

Merchants Co-operating—Retail merchants of Moline, Ill., who are considering the formation of a stock company to carry out a co-operative delivery of goods plan, will use motor trucks in place of horse-drawn vehicles. Where it is now necessary to use scores of individual delivery wagons it is thought that four trucks will be all that is needed.

Marmon After Brass Thieves—The Indianapolis police and a private detective agency have rounded up a gang of thieves who have been systematically robbing the plant of the Nordyke & Marmon Co. of brass. In all six men have been arrested, including a junk dealer and two transfer wagon men. It is estimated about \$1,000 worth of brass has been stolen in the last few weeks.

Tri-Cities Doing Business—Growth of the retail business in Davenport, Ia., is reflected in the fact that there are now 990 owners in the tri-cities who have permits for driving machines through the grounds of the government arsenal on Rock Island, situated opposite Davenport in the Mississippi river and connected by bridge with Davenport, Rock Island and Moline. The number of permits, which show a great increase this year over last season, is taken as a thermometer for the retail sales in the three cities, as every owner, because of the beauty of the arsenal grounds, desires a pass through the government island.

Haynes Recovers from Fire—The Haynes Automobile Co., whose plant was damaged by fire recently, reports that it has fully recovered from the effects of the conflagration. Cars are being manufactured regularly and in large quantities and from now on the shipping of them will go on without interruption. Meanwhile the building of the new factory is being carried on with a rush. Some 300 men are working overtime clearing away the debris of the old plant and preparing the site for erection of the new factory. The Haynes people are planning to put up a model building in every respect and one that is provided with all that is latest and most valuable in the way of equip-

ment and machinery. To further this end they have appointed a committee to make a tour of the big factories of the country and to carefully study their arrangements and methods.

Moskovics with Remy—Fred E. Moskovics has affiliated with the Remy Electric Co. of Anderson, Ind., as sales manager. Mr. Moskovics was interested in the construction of the Los Angeles motordrome and has been long identified with the industry.

Garford in a New Line—A. L. Garford, president of the Garford company, has opened a public service department for the manufacture of a complete line of motor-driven apparatus, such as driven pumping engines, patrol wagons, ambulances and, in fact, everything pertaining to the public service work for municipalities. The Garford company is using a specially designed chassis of extra strength and extra weight.

Will Make Trucks—The Lord Baltimore Motor Car Co. has been organized in Baltimore, Md., with a capital stock of \$1,000,000 to manufacture commercial cars in Baltimore. The designer of the Lord Baltimore truck is John Luntz, Jr., president of the company. The company expects to put out 100 trucks during the balance of the year. Following this the output will be increased and the cars arranged in three classes—a light truck, a 3-ton truck and a 5-ton truck. Later taxicabs will be made. All parts of the machines will be made in Baltimore.

Good Run by Truck—The C. W. Fischer Furniture Co., of Milwaukee, last week blazed the way for additional utility in motor trucks when it delivered a huge truck-load of furniture to a customer in Sheboygan, Wis., 62 miles north of Milwaukee. The trip was made in less than 5 hours, including stops. In the past shipments of this size have been loaded into a box car and sent to destination by railway. The Fischer company uses the truck for local deliveries and also for making deliveries to the suburbs. The Sheboygan delivery was the longest haul ever made under the same circumstances and conditions by any truck owned by a Milwaukee business house.

Discusses Traffic Problem—The Boston chamber of commerce is trying to work out a plan whereby Atlantic avenue, the thoroughfare which skirts the waterfront, may be made more suitable for teaming and motor traffic. Several conferences have been held on the matter and it has been suggested that the Boston elevated railroad and the union freight railway should use the same tracks, which would reduce the number of tracks from four to two. Also that these tracks be under the elevated railroad structure. If this is done then it is proposed to have the street repaved and a new form of rail put in so that the wheels of teams and motor trucks may not be wedged between the rails and the paving, as sometimes happens now,

tearing off tires sometimes. It has been suggested that the new pavement be of asphalt or brick, giving a smooth surface, and that motor trucks be allowed to use this part of the thoroughfare and horse-drawn vehicles be kept to either side.

Grant Succeeds Lane—The Detroit Automobile Dealers' Association tendered a banquet at Ardussi's to its retiring president, George E. Lane. His retirement caused the election of an entirely new slate of officers, who are as follows: President, George D. Grant; vice-president, W. F. B. Neumann; secretary, Joseph A. Schultz; treasurer, Robert K. Davis. These, with H. D. Morton, form the board of directors.

Truck Business in Tri-Cities—Demand for trucks in Moline, Davenport and Rock Island is steadily on the increase. The number of sales this year has been considerably larger than local dealers expected, although the agents for standard trucks in Moline, Rock Island and Davenport forecasted a heavy trade early in the season. In Davenport the call is for the heavier vehicles, as that city is the location of most of the wholesale houses of the tri-cities. However, there is a considerable demand for the large trucks in Rock Island and Moline. The demand for light delivery vehicles is also considerable, and is proportionately larger in Rock Island and Moline, where they are proving very popu-

lar in the retail trade. The trucks of 3-ton capacity or more have an especially good field in Davenport because of the extensive brick paving of that city.

Opens Detroit Branch—The New Departure Mfg. Co., of Bristol, Conn., manufacturer of a line of specialties, including ball bearings, will open a western branch in the Ford building, Detroit, Mich. The company will maintain an engineering and sales force at this branch.

Drawback on Tire Fabric—The treasury department has ruled that on the exportation of tire fabric manufactured wholly from imported combed sea island and combed Egyptian cotton yarn, a drawback will be allowed equal in amount to the duty paid on the imported yarn used, less the legal deduction of 1 per cent.

Recent Exports—The United States Motor Co., in addition to its large business in continental Europe, has shipped cars in the last 60 days to twenty other countries, some of which are in the most remote parts of the world. The shipments consisted of Maxwell, Columbia, Stoddard-Dayton, Brush and Sampson cars, and were sent to the following countries: Java, Manila, Mexico, Yucatan, Brazil, Cuba, Panama, Argentine Republic, United States of Colombia, Cape Colony, S. A.; Isle of Pines, Puerto Rico, Transvaal, S. A.; Barbadoes, Hawaii, Trinidad, Australia, Singapore, Uruguay, Canada.

New Marmon Racer—The latest speed creation from the Marmon shops was given its first workout at the Indianapolis motor speedway last week under the direction of Joe Dawson, who has carefully watched every detail of the construction. The new car, which will be known as No. 31 in the 500-mile race on Decoration day, varies but slightly from the regular stock chassis of the 1911 Marmon cars. The motor is built with a 4½-inch bore and 7-inch stroke and is about 42 horsepower, though its A. L. A. M. rating is but 32 horsepower. It is of the same general design as the stock motor with 2-inch longer stroke. The other Marmon entry for the big event will be No. 32, the six-cylinder Wasp, which captured the Wheeler & Schebler trophy.

Now the Russell Company—The directors of the Canada Cycle and Motor Co., Ltd., Toronto, will call a meeting of shareholders shortly to ratify the resolution adopted at a recent meeting providing for the creation of \$800,000 of 7 per cent cumulative convertible preference shares, the present \$800,000 to become common stock. At the same meeting the directors decided to change the name of the company to the Russell Motor Car Co., Limited, so as to have a shorter name, which also recognizes the predominant importance of the company's motor car business. The company's cars have for the last few years been known as Russell cars and it is felt that it will simplify matters to have the cars more naturally associated with the name of the company.



MULTIPLE-DRILL WORK

Doing four operations at once is one great means of reducing the manufacturing cost in building cars. This illustration shows a multiple-drill boring four holes at once in an Overland flywheel. The holes are for the bolts that hold the flywheel to the integral flange on the crankshaft. This method of attaching the flywheel has superseded the old keying method.

Fort Wayne Motor—Hartford Universal

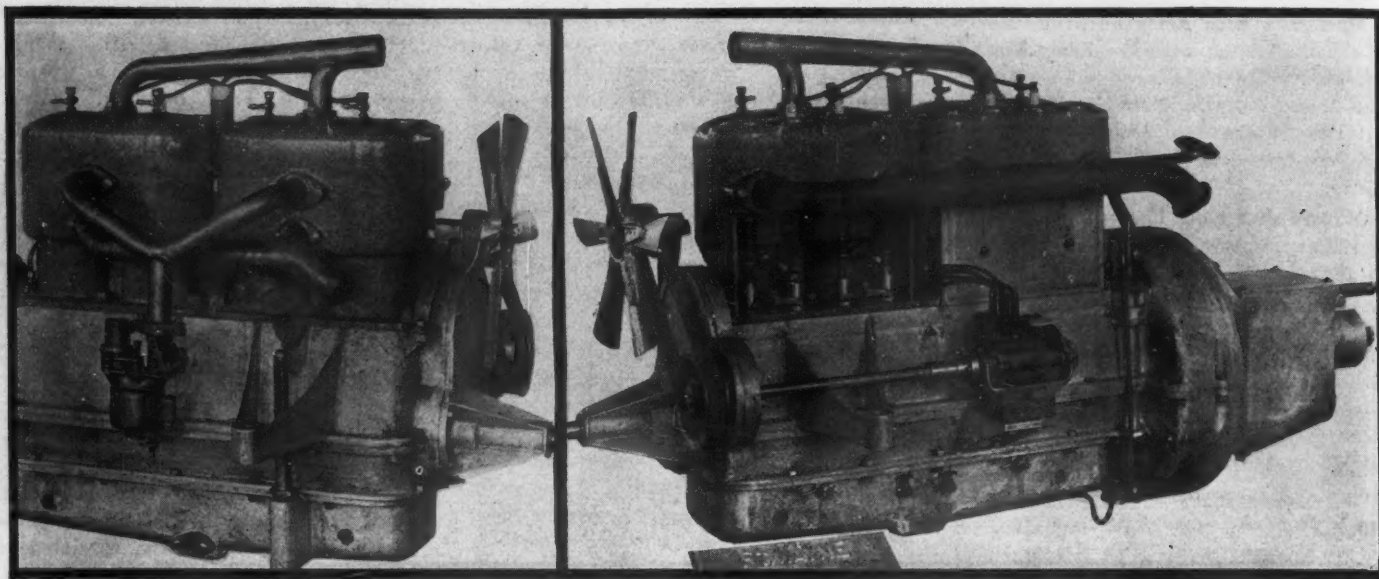


FIG. 1—FORT WAYNE UNIT MOTOR AND SELECTIVE GEARSET

THE Fort Wayne combination four-cylinder motor and gearset for this season is a unit construction carried at three points, two in front and one on a cross member of the frame at the rear of the gearbox. The motor is an L-type design, with cylinders cast in pairs and having $4\frac{1}{2}$ -inch bore and 5-inch stroke. Thermo-syphon water cooling is made use of and the motor is arranged for single, double, or dual ignition system.

The cylinders are close-grained gray iron, each foundry heat or pour being analyzed to insure uniform metal. The pistons are not of the same grade of iron, but are several degrees harder. They are made $5\frac{1}{2}$ inches long and, like the cylinders, are given a grinding finish. Each piston carries three eccentric compression rings $\frac{5}{16}$ -inch wide and with a 45-degree split. The piston pins are seamless carbon steel tubing, hardened and ground to size, and designed to be locked to the piston bosses.

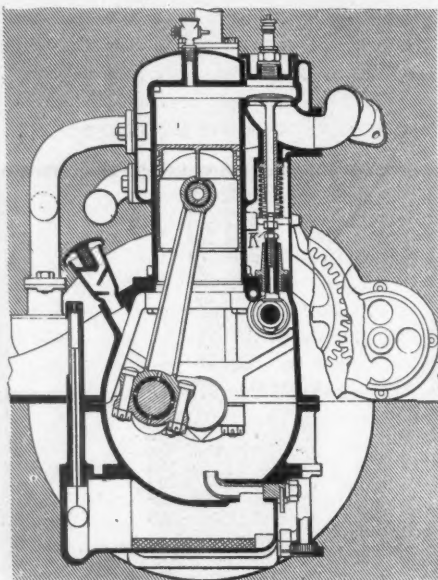


FIG. 2—FORT WAYNE MOTOR

Both sets of valves have cast heads, fused integrally to the carbon steel stems. Valve lifters, as the sectional illustration shows, are of the mushroom type where they bear upon the cams, not having the conventional rollers. Into the top of mushroom sleeve is a threaded rod R, see vertical end section illustration of the motor, carrying nut and locknut to get the proper adjustment between the tappet and the valve springs.

The crankshaft is carried on three bearings, all $1\frac{7}{8}$ -inch in diameter. The front one is $2\frac{3}{4}$ inches long, the middle 3 inches, and the rear $4\frac{1}{2}$ inches. The shaft has an integral flange for the attachment of the flywheel. Connecting rods are of special steel and carry bronze bushings 2 inches long at the piston end, and die cast bushings at the crankshaft end. The die cast bushings are $2\frac{3}{4}$ inches long and $1\frac{7}{8}$ -inch in diameter.

The camshaft is made with integral cams. The crankcase, gearbox and other parts are cast from an aluminum copper alloy. The crankcase housing is in three parts. The top and intermediate sections have rear end expansions to encase the flywheel, and to these the gearbox is bolted. The lower portion of the crankcase is merely an oil well.

The lubricating system is a circulating one with an external gear pump at the left rear and driven by vertical shaft from the camshaft. From this pump oil is delivered to a coreway in the crankcase. This coreway has openings that register with the camshaft bearings and also the crankshaft bearings, thereby delivering oil directly to these parts. On the right side of the motor is an oil gauge to show the amount of lubricant in the crankcase. Immediately above this is a large filler pipe.



FIG. 3—TWO HARTFORD UNIVERSAL JOINTS

The gearset is a selective type with three forward speeds, the gears are nickel steel with hobbled teeth to facilitate changing speed. Timken bearings are used in it. The clutch is an internal type with 90 square inches of contact surface. It is entirely housed within the flywheel and mounted on an annular ball bearing on the reduced end of the crankshaft. It is operated by a cross link and bellcrank. Connection between the clutch and gearset is direct. Fort Wayne Auto Motor Co., Fort Wayne, Ind.

The Fort Wayne unit motor is shown in four views. In Fig. 1, the left-hand illustration presents the intake side of the motor and the right-hand view shows the exhaust side. Fig. 2 shows an end sectional view and Fig. 5 illustrates a full side elevation of the motor and gearset.

E-Z-2 Vulcanizer

The E-Z-2-Work steam vulcanizer is designed for tire repair work and can be clamped to the tire for a repair on the road. It is made of heavy brass and partly filled with water. The water is heated by an alcohol lamp so that the temperature can be regulated as desired. The E-Z-2-Work Steam Vulcanizer Co., Cleveland, O.

Hartford Universal Joints

One design of Hartford universal joint as used at the front and rear ends of a propeller shaft in a shaft-driven car is illustrated in Fig. 3. C is the front joint assembled and B is the slip joint at the rear also assembled. G is the connecting propeller shaft. The front joint C is made up of three major points, namely, the flanged yoke forging D carrying the two bearing pins DI; the bearing ring F with a central bearing pin FI and two hardened and ground bushings F2, and the flanged

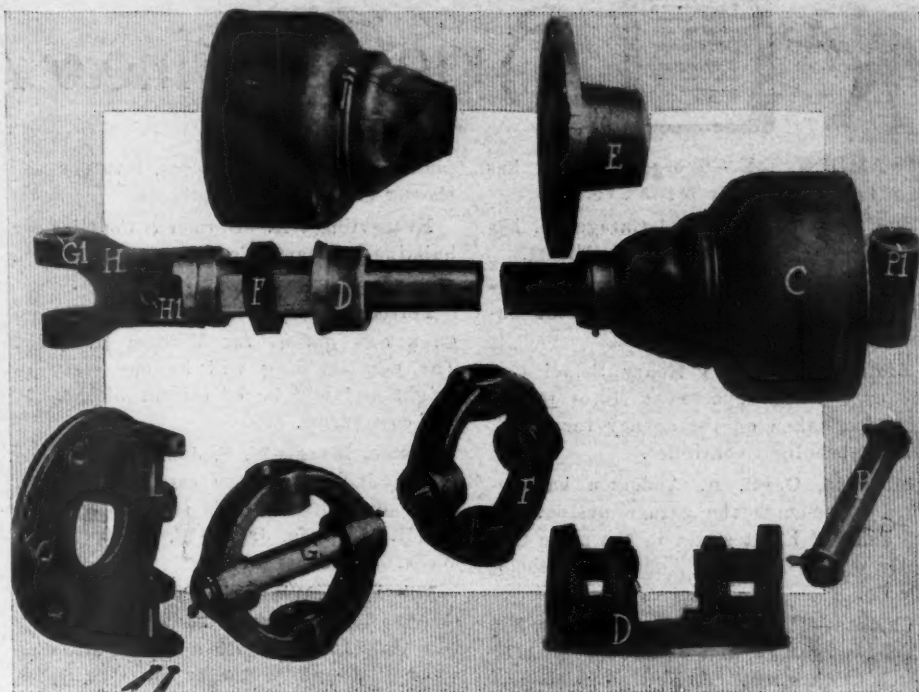


FIG. 4—DRIVE SHAFT WITH TWO HARTFORD JOINTS

hub forging E. In assembly the two bearing pins DI enter the bushings F2 and the forging D bolts to the flanged hub E. The casing for the joint enters the groove D2. The assembly of the rear joint B is simple, comprising the slotted yoke A which is hardened and ground. The external features of this yoke include the grease plug 1, the casing screw 2, the adjustable boot clamp 3, the rawhide boot 4, and the shaft clamp 5. Another type of universal joint intended for shaft-driven cars using two universal joints in the propeller shaft is illustrated in Fig. 4. The top portion shows the as-

sembly complete and the lower portion the parts separated. The front joint is made up of the three parts—A the flanged hub forging, B the flanged yoke forging, and C the bearing ring. The pin P is keyed into the shaft end P1. In the slip joint at the opposite end of the propeller shaft the slip hub H is seen, also the hole H1 to facilitate the grease getting between the sliding hub and the squared shaft on which it slides. A felt washer F is a part of this joint, as also is the dirt cap. To the groove G fits in the key G1 in the slip hub. K are the casing screw holes.

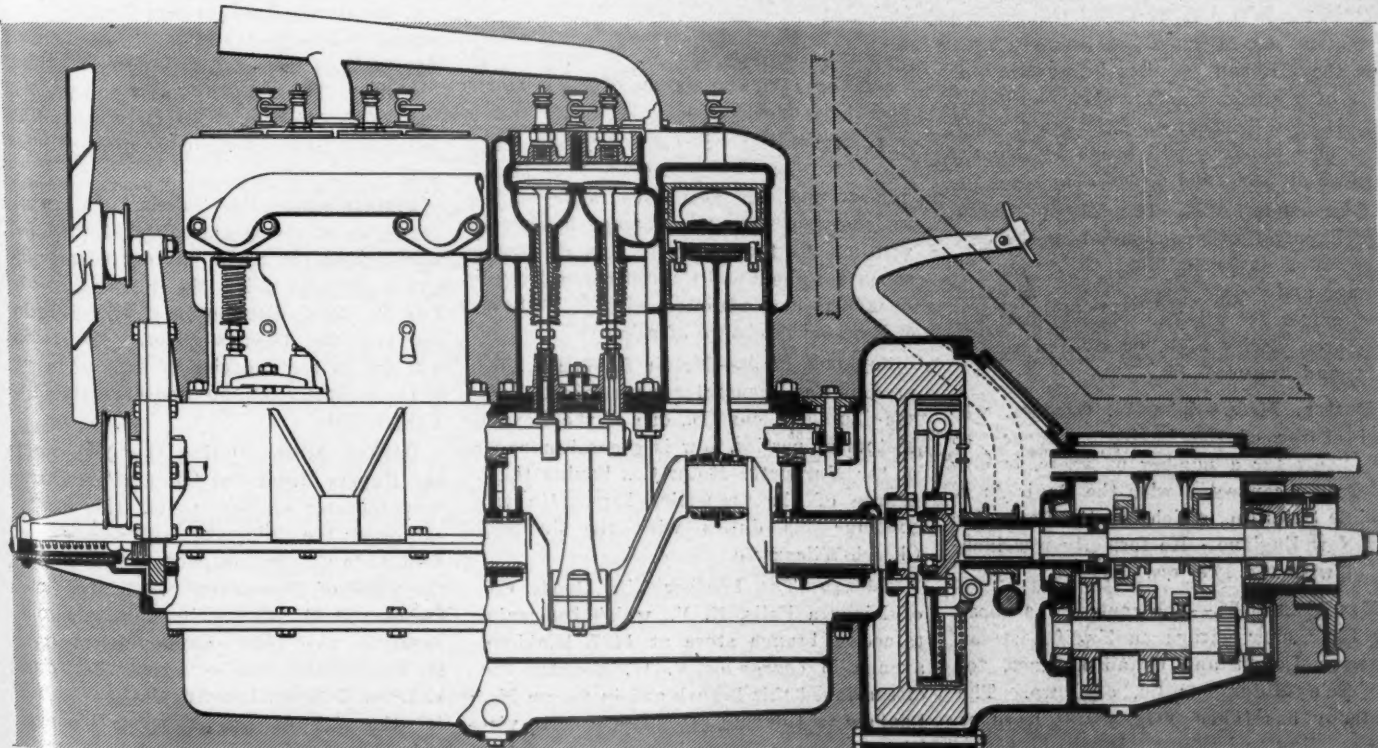


FIG. 5—SIDE ELEVATION AND SECTION OF FORT WAYNE UNIT MOTOR AND GEARSET FOR 1911 MARKET



Brief Business Announcements



CAMDEN, ME.—George E. Allen has taken the agency for the Velie.

Belfast, Me.—The Read Garage Co. has closed for the Velie agency for Belfast.

Boston, Mass.—E. C. Thompson has joined the local branch of the Fiat under Manager R. R. Ross.

Boston, Mass.—The Henry Seigel Co., one of the big department stores in the Hub, has taken on the agency for W. S. Scheu's headlight controller.

Marietta, O.—S. A. Anderson has decided to re-enter the garage business at 115 and 117 Front street in the place formerly occupied by the Anderson Automobile Co.

Chicago—The Apollo Automobile Co. has opened a garage and salesroom at 1117 North Clark street. J. Newton Withey is president and Gustav Franklin secretary-treasurer.

Boston, Mass.—The American Simplex Co., agent for the Amplex and Atlas cars, has moved from Dartmouth street to Huntington avenue. This was done to give better garage facilities.

New York—C. H. Pearson, formerly with the Neora Mfg. Co., of Waterbury, Conn., has accepted a position in the hoist department of the Yale & Towne Mfg. Co. His field of operations will be in the west.

New York—D. Brooks, for the past 2 years with J. H. Parsons & Co., has become New York manager for the Gus Balzer Co., Fifty-fourth street and Broadway. The company manufactures limousine bouquet holders.

Kalamazoo, Mich.—R. R. Brenner, agent for the Mitchell car, has begun the erection of a garage machine shop in the rear of his establishment on East Main street. The new building will be 40 by 150 and will be of brick and cement.

Rhineland, Wis.—The Morgan Garage and Supply Co. is contemplating the erection of a large building to contain its garage and repair shops, as well as stores and offices for others. The building will be three stories high, 60 by 140 feet in size, and fireproof.

Boston, Mass.—John W. Gardner, who had charge of the Lexington agency at St. Louis for a number of years, is now in Boston connected with the Davis Automobile Sales Co., which has the Lexington for New England. He formerly was identified with the Peerless.

Des Moines, Ia.—The contract has been let for a new garage on Twelfth street, between Locust and Grand avenues, for the Cole Motor Car Co. of Iowa. The company has taken a 10 years' lease of the building to be built. It will be 85 by 27, fully equipped with a steam-heating

plant, electric light and gas, lavatory and shower baths for the employees.

Evansville, Wis.—Durmer & Courtier are building in Evansville instead of Edgerton, as reported in Motor Age.

Portland, Mich.—Work has been begun on a new garage for William H. Earle. The new building will be one story in height and will be of cement blocks. It will cost \$2,000.

Boston, Mass.—W. S. Jameson, who has the Moline and Selden cars in the Hub, has had to increase his sales force, adding H. E. Leefe, James W. Foley and H. Wells, Jr., to his staff.

Milwaukee, Wis.—The Perfect Auto Tire Co. has been incorporated with headquarters at Milwaukee with a capital stock of \$50,000. Frank A. Cooper, H. C. E. Quentin and W. S. Hopkins appear as incorporators.

Wilmington, Del.—George C. Hutton, who is engaged in the plumbing business, has purchased a good-sized plot of ground at the southeast corner of Eleventh and Orange streets for \$19,000, on which he expects to build a garage.

Cincinnati, O.—The Steubing Co. has been incorporated with a capital of \$25,000 to manufacture and assemble tire-mounting machinery. The incorporators are William Steubing, Walter A. Steubing, Edward Steubing, Oliver G. Bailey and W. H. Cobb, Jr.

Columbus, O.—The Scudder Mfg. Co. has been incorporated with an authorized capital of \$15,000 to manufacture and sell all kinds of motor supplies and accessories. The incorporators are W. R. Scudder, G. L. Hempy, E. H. Mercer, J. L. Oldham and O. H. Mosier.

Chicago—H. C. Stern & Brothers have moved to their new quarters at 2519 Michigan avenue, and also have taken on the sales end of the Duro storage battery in addition to their regular line of Foster shock absorbers and Gabriel horns. Eugene Zucker is now affiliated with H. C. Stern & Brothers in charge of sales.

Saginaw, Mich.—Melvin L. Wilcox, vice-president and general manager of the Jackson-Church-Wilcox Co., one of the General Motors properties, now is general manager of the Marquette Motor Co., having taken charge of the properties here. He will continue his duties with the Jackson-Church-Wilcox Co.

Chicago—The Leather Tire Goods Co., of Niagara Falls, N. Y., which has maintained a branch store at 1407 Michigan avenue in charge of V. W. Bonham has discontinued this branch and in future Mr. Bonham will devote his entire time to visiting the trade in the larger cities of the middle west. The Beckley-Ralston Co., 80-

84 Michigan avenue, will carry the line of Woodworth treads.

Kalamazoo, Mich.—Thomas C. Goodrich has been secured by the Kalamazoo Motor Co. to take charge of the mechanical department of the West street garage.

Des Moines, Ia.—The Independent Auto Co. will move into its new quarters at Eleventh and Mulberry streets. A garage will be the big feature of the new plant.

Baltimore, Md.—The Stoddard-Dayton Auto Co. has established a new subagency in Carroll county. W. Morris Haines, of Linwood, that county, has been named as the representative there.

Austin, Tex.—A permit to do business in Texas was granted to the Franklin Automobile Co., of Syracuse, N. Y., with Texas headquarters at Austin, San Antonio, El Paso, Galveston, Dallas and Houston; capital stock \$400,000.

Boston, Mass.—John Mahoney and Arthur Watkins, who have been identified with the accessory business for a number of years, have formed a partnership under the name of the Boston Auto Supply Co. and have opened quarters at 749A Boylston street.

Akron, O.—The Akron Auto Garage Co. has been remodeled into a manufacturing establishment, where a patented engine-starter will be made. The invention is the product of A. Auble with the assistance of Charles Steele. The concern will be known as the Auto Device Mfg. Co.

Columbus, O.—The Auto Inner Casing Co. has opened headquarters for salesrooms at 343 North Fourth street. The main office remains the same as before, 7 Clinton building. The company has a patented device of woven fabric that laces around the inner tube and is designed to prevent blow-outs or rim cuts.

Philadelphia, Pa.—Edwin H. Lewis, treasurer of the Quaker City Motor Club, has entered the trade, having recently become affiliated with the Fanning Motor Car Co. local distributor of the Bergdoll car and the Thomas Flyer. Mr. Lewis will act in the capacity of sales manager of the company for the territory outside of Philadelphia.

Detroit, Mich.—During the past month the Havers Motor Car Co., of Port Huron, manufacturer of the Havers six, has established the following agencies: Maxfield Auto Co., Minneapolis, distributor for the state of Minnesota, North and South Dakota; D. C. Willoughby, Boston, agency covering the New England states; J. Payton Hunter, Dallas, agent for Texas; Vanness & Myer, Los Angeles, Cal., agent for the city of Los Angeles; Upperman Auto Agency, Upper Sandusky, O., agent for Wyandotte county; Port Huron Ma-

chinery Co., Des Moines, agent for the state of Iowa.

Columbus, O.—The Early Motor Car Co., of South High street, Columbus, has taken the central Ohio agency for the Paige-Detroit.

Boston, Mass.—The Selden Motor Car Co. that handles the Moline and Selden in the Hub has entered the commercial field, having taken on the Mais line.

Lockhart, Tex.—The brick garage just completed by Lea Beaty has been rented to the Lockhart Motor Co., with E. M. Salley, of San Antonio, as manager.

Port Huron, Mich.—At the adjourned annual meeting of the Cass Motor Truck Co. John Younger was chosen general manager. Reports showed the business to be in a flourishing condition.

Cleveland, O.—The Krause-Konstant Carburetor Co. has been incorporated with an authorized capital of \$15,000 to manufacture carburetors and motor accessories. R. E. Krause and others are the incorporators.

Pittsburg, Pa.—The Avalon Regal Motor Car Co., which has been operated by Robinson & McClelland, has merged with the Buhl Motor Car Co., of this city. The old location of Avalon will be continued as a branch house.

Fort Atkinson, Wis.—J. P. Hammes, of the J. C. Hebbe Motor Co., has opened a garage of his own in the Wicke building in this city. The name of the new firm is Hammes & Will. A repair shop, agency, livery and accessory store will be conducted.

Detroit, Mich.—A recent addition to the list of local retailers is the Detroit branch of the Welch company of Detroit. The cars of this company have formerly been handled by the various Buick retailers. This plan did not, however, yield the desired individuality and the change is the result.

Philadelphia, Pa.—New factories covering three city blocks have been completed for the manufacture of Bergdoll cars. The Louis J. Bergdoll Motor Co. has appointed J. Mara Boyle, of the Correja Motor Car Co., as its eastern distributing agent. Mr. Boyle will handle the Bergdoll in connection with the Correja.

Boston, Mass.—The Abbott-Detroit now is being retailed in Boston in new salesrooms at 9 and 11 Harecourt street, Back Bay, where it has garage facilities. W. Mason Turner, who formerly was with the American Simplex, and Burleigh N. Crockett, who was with the E-M-F company until recently, are handling the car.

Boston, Mass.—The Kisselkar Co. has opened its own branch in Boston and placed it in charge of H. B. Pruder, who was sent here from the factory. For several years these cars were sold in Boston by J. W. Hallett and H. C. Stratton. The branch will handle trucks as well as cars and the salesrooms will be in the same

location on Boylston street, where the cars were handled through the agency.

Boston, Mass.—Fred Randall, who has been abroad for several months, has just returned and he has again joined the motor colony, having taken the agency for the National car.

Indianapolis, Ind.—The Miller Rubber Co., of Akron, Ohio, announces the establishment of a new branch at 607 North Illinois street. This branch will be in charge of F. R. Bryan.

Boston, Mass.—George Crittenden, for the past 2 years connected with the American Automobile Co., selling American and Krit cars, has resigned to go with the Boston branch of the Lozier.

Sheboygan Falls, Wis.—Walter J. Koehn has resigned as manager of the Falls Machine Co., a large producer of gasoline motors at Sheboygan Falls, and has been succeeded by Angelo Clas, formerly of Milwaukee.

Baltimore, Md.—The new home of the Winton Motor Carriage Co., Mount Royal and North avenues, is fast nearing completion. It will be opened June 1. The building will have 100 feet space on Mount Royal avenue.

Boston, Mass.—Louis R. Mack, who has been associated with Alvan T. Fuller, handling Packard cars in and about Boston, has branched out for himself and taken the agency for those cars in Buenos Ayres. He is now on his way there to open up the agency.

Albany, N. Y.—T. Francis Kennedy, acting as head of the Cohoes Automobile Co., has purchased a plot of ground at the corner of Saratoga and Ontario streets, upon which he will build a modern garage to replace the structure destroyed by fire last August. The recently incorporated Cohoes

Automobile Co. will erect a concrete garage and factory on the site.

Easton, Me.—H. R. Delaite has taken the Velie agency for Aroostook county.

Port Huron, Mich.—The Oakland Sales Co. now is doing business at 407 Water street.

Boston, Mass.—Robert B. Kayser is the latest addition to the sales force of the Velie branch in the Hub. He formerly sold this same make of cars in Los Angeles.

Grand Rapids, Mich.—The Goodrich Tire and Rubber Co. has established a local branch store and service station at 7 North Division street, with E. P. Douse in charge.

Marinette, Wis.—The Marinette Motor Car Co., Marinette, Wis., is now comfortably settled in its garage at 2319 Hall avenue. The company is a district agent for the Buick.

Hutchinson, Kan.—The Automobile Supply Co. will open here May 1 with A. J. Jackson in charge. Mr. Jackson formerly was associated with the Automobile Supply Co. of Chicago.

Portland, Me.—The Forest City garage has closed with the Velie Motor Car Co. of Maine for the Velie agency in Portland. Roscoe Willard will be in charge of the Velie sales and maintenance departments.

Pittsburg, Pa.—A. F. Schmidt, who has been associated with the Pitt Motor Sales Co., has sold out his interest in this company and will shortly organize a manufacturing company to manufacture trucks and pleasure cars.

Milwaukee, Wis.—The T. C. Olsen Co. has been organized at Madison, Wis., by T. C. Olson and I. C. Korsmo and has opened a machine shop at 228 East Main street. The firm will pay especial attention to motor business.

Toledo, O.—The Interstate Supply Co. has been incorporated with an authorized capital of \$10,000 to manufacture and sell motor cars and all kinds of motor car supplies. The incorporators are Clarence D. Pettingell, James Samsen, Fred H. Kruse, Mark Winchester and William J. Frische.

Sheboygan, Wis.—Beutel Brothers, North Ninth street, wagon manufacturers, will erect a 4-story brick building on the St. Clair avenue frontage of their present plant. The first floor will be used as a garage, the second and third for the manufacture of motor car bodies and the fourth for storage. The basement will be equipped as a machine shop.

Manitowoc, Wis.—The Aluminum Goods Mfg. Co. has accepted plans for the additional buildings to be erected at the Manitowoc plant. The main building will be 300 by 43 feet in size, three stories high; the power house, 60 by 40 feet, equipped to produce 500 horsepower; service tower, 43 by 20 feet, four stories high; brick stack, 125 feet high.

Recent Incorporations

New York—Universal Automatic Selling Co., capital stock \$100,000; to deal in motor cars; incorporators, H. S. Flynn, G. R. Rubin and T. E. Flynn.

New York—R. & L. Co., capital stock \$100,000; to manufacture and deal in motor vehicles; incorporators, J. T. Rainier and P. N. Lineberger.

New York—Farnham Self-Cranking Motor Co., capital stock \$50,000; to manufacture motor parts and accessories; incorporators, C. C. Farnham, F. G. Fishbeck and P. P. Shutt.

New York—Atlas Sales Co., capital stock \$10,000; to manufacture and deal in motor car accessories; incorporators, B. B. Mears, N. J. Alexander and L. H. Nachman.

Buffalo, N. Y.—Lippard-Stewart Motor Truck Co., capital stock \$35,000; to manufacture motor cars, boats, etc.; incorporators, T. R. Lippard, R. G. Stewart and R. E. Dougan.

Trenton, N. J.—American Automatic Service Co., capital stock \$600,000; to manufacture motor car machines.

Boston, Mass.—W. L. Russell Co., capital stock \$60,000; to deal in motor vehicles; incorporators, W. L. Russell and G. R. Armstrong.

Boston, Mass.—Nemasket Automobile Co., capital stock \$20,000; incorporators, J. G. Howes, J. W. Howes and W. L. Whittier.

Nashville, Tenn.—Mount Pleasant Auto and Machine Co., capital stock \$5,000; incorporators, E. Irwin, P. S. Chandler, J. A. English, E. Kittrell and A. W. Craigie.



Legal Lights and Side Lights

CONNECTICUT'S NEW BILL

CONNECTICUT'S new motor bill, as reported by the committee on roads, rivers and bridges, and as it undoubtedly will pass the legislature, does not differ materially from the old law, the chief change being the insertion of a 25-mile speed limit clause. The present law allows drivers to operate their cars with a due regard for the rights of pedestrians, but does not provide a maximum limit. The new clause is as follows:

"No person shall in any case operate a motor vehicle on the highways of this state at a greater rate of speed than 25 miles an hour."

Another important addition reads as follows: "Every person who conducts a public garage shall keep a book upon which shall be registered the name of the maker, the registered number and name of every transient motor vehicle left or stored in such garage, together with the name of the operator of such motor vehicle and number of such operator's license. The operator of each motor vehicle so temporarily left or stored in any public garage shall enter on said book the time when said motor vehicle enters such garage and the time when takes the same therefrom and he shall sign his name to such entry."

The new bill provides that any officer making an arrest for violation of the motor law shall make a return to the secretary of state within 24 hours, giving the name and number and a description. Failure to abide by this provision means a fine of \$50. It also provides that the secretary of state, the selectmen or the prosecuting attorney of any town may call on the state police to aid in the enforcement of the laws. Every application for a license to operate a car must be signed and sworn to and signed before a notary. Dealers must file with the secretary of the state a certificate of his appointment as agent or sub-agent and also semi-annually with the secretary of state a statement under oath of all cars transferred by him and the names of the persons to whom the cars were transferred. The measure provides a reciprocity clause for those states which exchange the same courtesy with Connecticut—a 10-day leeway.

NEW BILL IN ILLINOIS

A compromise good roads bill which increases the license fees for motor cars, the money so collected to be spent for improved highways under the direction of a superintendent of roads in each county, has been introduced into the house at Springfield, Ill., by the committee on roads and bridges.

It is a substitute for four pending bills,

each designed to revolutionize road building in Illinois. The superintendent is to classify the roads with a view of connecting the principal points in the county by an improved highway following the most traveled route. To insure uniformity, plans must be approved by the state highways commission.

At present nearly \$4,500,000 in road taxes is spent annually by township supervisors and commissioners without getting adequate results. The bill contains the idea of Homer J. Tice concerning motor car licenses. It fixes the annual state fee as follows: 25 horsepower, \$4; 35 horsepower, \$6; 50 horsepower, \$8; over 50 horsepower, \$10.

Speed limits through residence and business districts and on public highways are fixed as follows: Through business districts of cities, 10 miles an hour; through resident districts, 15 miles an hour; on public highways, 25 miles an hour; around curves, 6 miles an hour.

The penalties for breaking the speed limit are unchanged by the bill.

JURY ONE TO DECIDE

The supreme court of California holds that where the driver of a street car is clearly negligent in his collision with a motor car, it is for the jury to determine whether the conduct of the motor car driver is such as to amount to contributory negligence, thus barring recovery on his part.

The record in part in Hoff vs. Los Angeles-Pacific Co., 112 Pac. (Cal.) 53 follows: "It is not seriously contended that the evidence compels the conclusion that Dr. Hoff's conduct after he first saw the approaching cars was such as to show contributory negligence on his part as matter of law. At that time he was from 6 to 8 feet from the track upon which the cars were approaching, with the front of his machine nearly on the track, and traveling at a rate of speed of 5 or 6 miles an hour. As we must on this appeal, we are considering the evidence in the light most favorable to plaintiff. He then saw the cars approaching at a point apparently about 100 to 125 feet away. He almost immediately increased his speed in an endeavor to get over the track. It is not at all clear but that this was his only chance to escape a collision under the existing circumstances, for the evidence is such as to warrant the conclusion that he could not then have stopped his machine before it reached the railroad track. But it is to be remembered that a person in great peril, where immediate action is necessary to avoid it, is not required to exercise all of that presence of mind and carefulness which are justly

required of a careful and prudent man under ordinary circumstances, and that the reasonableness of his effort to escape injury after the discovery of the danger is a question for the jury, to be determined by them in view of all the circumstances.

"The best we can say for defendant upon the evidence in this record is that the question whether Hoff was negligent in approaching this crossing is one upon which reasonable men might well differ. This being so, it was a question for the jury, and the trial court should not have granted the motion for a non-suit."

In a recent Michigan case, Cusick vs. Kinney, 128 N. W. (Mich.) 1089, the lower court directed a verdict for the defendant, and upon the plaintiff bringing an appeal the decision of the lower court was reversed on the ground that the evidence of negligence on the part of both plaintiff and defendant should have been submitted to a jury.

"The plaintiff was injured by a horse that was frightened by a motor car. Plaintiff was leading a horse by a headstall, when defendant's car came over a hill 25 rods distant. The horse was restive. Plaintiff did not signal for the driver to stop, and he came along toward the horse, which finally reared and struck plaintiff down and ran away. The court directed a verdict upon the ground of contributory negligence, holding that the plaintiff should have let go of his horse.

"We are of the opinion that this was error. Both the question of defendant's negligence and plaintiff's contributory negligence should have been submitted to the jury. It is quite possible that they might have found contributory negligence, or that the defendant was not negligent; but the testimony was not undisputed and a case for the jury was made."

WOULD REORGANIZE COMMISSION

The McGuire bill, providing for a reorganization of the Ohio state highway commission, was passed by the Ohio senate recently and is now up in the house of representatives for action. The bill provides for the separation of the work of the department into three bureaus, that of construction, maintenance and bridges. The bill increases the salary of the state highway commissioner and gives him three deputies, each of which will have charge of one of the bureaus.

The senate has also passed the bill of Senator Hudson providing for a codification of all laws dealing with highways in Ohio.

Upon invitation of the Ohio Good Roads Federation, a meeting of good roads enthusiasts was held in Columbus recently.